

# STEEL

The Weekly Magazine of Metalworking

VOL. 129 NO. 20

NOVEMBER 12, 1951

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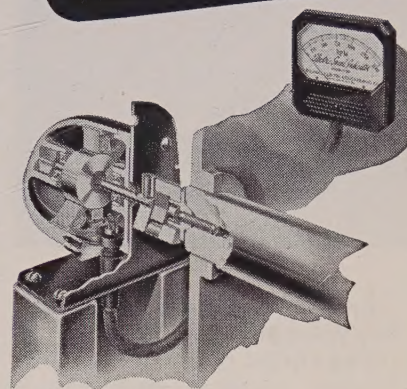
Editorial and Business Staff—Page 10. Advertising Index—Page 172. Editorial index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

**Next Week**... Metallography of Titanium Alloys... Revamped Setups Speed Machining of Appliance Parts... Huge Welders Handle Largest Aircraft Fuel Tanks... New Rotary Unit Cools Sinter Economically

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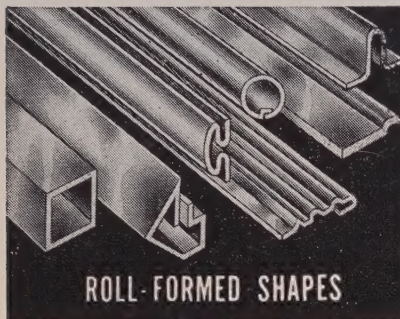
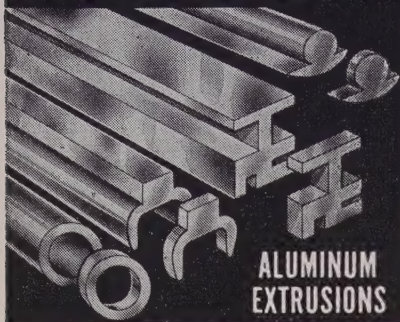
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Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year \$10; two years \$15; all other countries, one year \$20. Single copies (current issues) 50 cents. Metalworking Yearbook issue \$2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1951 by Penton Publishing Co.

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# Behind the Scenes...

## Science, It's Wonderful

You'd think there was nothing simpler than picking up a telephone and dialing a number, but James Kilborg Corp., San Mateo, Calif., has simplified even that, according to Allegheny Ludlum Steel Corp.'s handsome *Steel Horizons*.

It has developed a Dialaphone. All you do is press a button and presto—there's the party on the line. The gadget can remember up to 500 telephone numbers and never fails to get the correct one. It's just a little larger than the ordinary telephone and consists of 1030 parts. The top of the machine bristles with pushbuttons—eight for fire, emergency and your six most frequently called numbers. To call anyone of the eight, you lift the receiver, wait for the dial tone and push the key. A rubber finger in the dial arm spins into action and dials the number. While it's working, you can be thinking of some good conversational remarks. In addition to those eight numbers, you can dial 54 more on one model or 506 more on another. That's done by means of a reel of plastic film on the front of the device. You write the names you call most frequently in alphabetical order on the reel, set the apparatus to match name and number. Spin the reel knob to the name you want, press a small bar and your call is automatically dialed.

## Aid

Two STEEL reprints have just come off the presses to help you. One reprint puts in booklet form a series of articles written by J. D. Keller, a consulting engineer and partner in Associated Engineers, Pittsburgh, on cold rolling strip. The installments appeared in various issues of STEEL from last February to August, and they make up the latest treatise on the subject. Small quantities are available gratis. Write Steel Plant Editor John D. Knox, STEEL, Penton Bldg., Cleveland 13, O.

The other reprint that had to be rerun was the article written by Associate Editor Vance Bell on how to save money and at the same time stretch your steel supplies. Small quantities are free, from Reader's Service Department, Penton Bldg., Cleveland 13.

## Vital Statistics

A piece of scientific research done by the Department of Interior at taxpayer's expense has resulted in a pamphlet called *Deer Mortality from Gunshot Wounds*. One conclusion reached by the detailed study is that

more deer without antlers are lying around after being shot by hunters than are deer with antlers. Wonder why?

## Suggested Titles

President Truman wants a library built and dedicated on his behalf to his home town of Grandview, Mo. He suggests that it be named the Truman Memorial Library and that it house all his public papers, letters, etc. Rep. Glenn Davis (Rep., Wis.) suggests that these books might be considered by Mr. Truman for inclusion in his library:

*Great Grab*, by S. Longstreet  
*How To Avoid Financial Tangles*, by K. C. Mastler  
*Home Freezing for Everyone*, by J. Alkire  
*How To Write Letters for All Occasions*, by Alexander F. Sheff  
*Piano Fallacies of Today*, by T. Matthay  
*Strategy in Poker, Business and War*, by J. D. McDonald  
*Helping Boys in Trouble*, by M. Applegate  
*Handbook of Rigging*, by W. E. Roan  
*Secrets for Sale*, by M. V. Hebered  
*How Our Government Raises and Spends Money*, by M. Newcomer  
*How To Become President*, by G. A. len  
*How To Get By In Wartime*, by Campbell.  
*How To Keep Out of Trouble*, by S. Weiss  
*How To Organize a Library*, by Z. Miller  
*Pressure Boys*, by K. G. Crawford  
*Mink Farming*, by J. L. Edwards  
*What To Do Until the Psychiatrist Comes*, by Norman Anthony  
*Decline and Fall of Practically Everybody*, by W. J. Cuppy

## Puzzle Corner

The soldiers in the Nov. 5 quar-  
 dary could get home the quickest  
 by walking one mile along the high-  
 way and then straight across to  
 fields (five miles) to camp. Elapsed  
 time: 87 minutes. First in with the  
 correct answer were Ralph E. Arnold  
 of Ft. Pitt Bridge Works, A. E.  
 Thompson of Midland Co., Paul  
 Frantz of Encino, Calif. and Robert  
 Huff of Canton, O.

A three-inch cube, painted black  
 is sawed into one-inch cubes. How  
 many cubes are painted on three sides  
 two sides and so on?

*Shradu*

ook

## In Step with Living Costs

No matter how you measure them, wages have kept pace with rising living costs. Straight-time hourly earnings are up 17 cents (12.5 per cent) above January, 1950, the base date of the stabilization program. Living costs rose a little more than 10 per cent. Higher hourly wages and a longer work week add \$2.39 to the purchasing power of weekly earnings.

Attorney General J. Howard McGrath has been making speeches lately and his theme in most of them is: Small business must play an increasing part in the defense program. Significance: The Department of Justice is keeping a watchful eye on the distribution of defense contracts and may step in if it thinks an imbalance is developing, particularly if small companies aren't getting enough of the subcontracts. . . . The Commerce Department has just finished a study defining small business. All firms with less than 100 employees are small, all with more than 2500 are large. The classification of those in between varies according to the relative size of the industry grouping.

Complaints thus far have been loud but not too numerous about NPA's elimination of the 10 per cent set-aside for first-come-first-served steel buyers in the last 15 days of the order acceptance period. The Senate's Small Business Committee sharply criticizes the action, but the House group is more moderate in its comments.

Washington planners will soon complete a survey to determine to what extent aluminum can replace copper in both the mobilization program and the period afterward. If it's encouraging, watch for a flurry of approvals in aluminum expansion programs. Defense Production Administrator Manly Fleischmann says the future for world supplies of copper is "extremely cloudy."

Production of metalworking equipment for rated purposes must be doubled in 1952, says Swan Bergstrom, director of NPA's Metalworking Equipment Division. That necessity is one of the reasons behind

the revision of M-41 and the issuance of M-41A, both concerning machine tools. The net effect of the new regulations will be to prohibit virtually all unrated machine tool users from placing orders for additional equipment for the duration of the emergency. . . . Great Britain and the U. S. have placed orders for more than 70 per cent of Italy's machine tool production between now and March, 1953. The U. S. has ordered \$4.2 million worth; Britain \$14 million worth.

## **Ominous Committee**

Businessmen who know their way around Washington are fearful of the new DPA-NPA security regulations. That's despite Administrator Fleischmann's assurances that his newly appointed Security Information Committee will have as its prime duty the dissemination of the maximum amount of information to the public. The fact that such a committee now exists is in itself ominous. Up until now NPA-DPA's dissemination of information has been outstandingly good. Will the excellent record continue?

## **Help for the Hard-Pressed**

Soon to be scheduled will be government-sponsored clinics to develop more prime and subcontract opportunities for all manufacturers of less essential items who have been cut back sharply on allotments of steel, copper and aluminum. The idea is to get those companies into defense work so they will be entitled to better allotments. The time and place schedules for the assistance clinics will be announced shortly.

## **Straws in the Wind**

Total purchase commitments involving the construction of Lone Star Steel Co.'s new steel and pipe mill in East Texas approximate \$40 million to date. . . . More liberal overtime and holiday pay provisions have been written into the Weirton Steel Co. — Independent Steelworkers Union contract. . . . Ford Motor Co. will lay off about 30,000 at its Rouge plant for part or all of the first two weeks in December, because of model changeovers and NPA cuts in quotas. . . . Civilian employment in the executive branch of the government dropped 11,875 in September, the first decrease in 15 months. . . . NPA has asked steel companies to divert strip and other existing facilities to boost the output of heavy steel plate by 200,000 tons quarterly. . . . Chrysler Corp. will announce an experimental sports car powered by an adaptation of the Firepower engine.

## **What Industry Is Doing**

The steelworkers this week formulate demands that promise to break the wage—and price—dikes (p. 47) . . . The situation in steel, copper and aluminum supplies won't ease until after mid-1952 (p. 49) . . . The scrap shortage is worsening and may affect the whole pig iron outlook (p. 50) . . . U. S. Steel Corp. will make its subsidiary companies divisions after Jan. 1 (p. 51) . . . Contract tool and die shops need at least 5000 more skilled employees (p. 53) . . . Machine tool builders need to prospect for subcontractors (p. 53) . . . The U. S. is hit by the failure of a West German scrap drive (p. 57).



November 12, 1951

## Need Clear-Cut Majorities

Results of last Tuesday's elections in the United States did not reveal any important national trend that can be translated into terms of prophecy for next year's general election. In many instances, local candidates who oppose policies of the Truman administration were elected to office and in fewer cases the opposite was true. The margin of anti-Truman victories was not conclusive.

In this respect the results were similar to those of the British elections of Oct. 25. Moreover, the lack of a workable majority in Britain and in the United States is a weakness that exists in many free nations of the world. France and Italy have weak, uncertain governments because no party can muster sufficient support to enable it to function effectively.

An excellent example of how lack of a substantial majority hampers a government is provided by the problem confronted by Winston Churchill in denationalizing the British steel industry. An important detail in the denationalizing process is to find private investors who will buy shares of stock in steel companies now owned by the government. Obviously investors, conscious of the slender margin of seats held by Conservatives, wonder whether British steel, if denationalized, will remain so. May not the labor government be back in power in another six months or so?

This uncertainty may make it impossible to return British steel to private ownership until an anti-socialist government in Britain gains a majority strong enough to support bold administrative leadership. The same idea holds true in many other countries, including our own. We can't enjoy good government unless a workable majority of the people will support the administration.

Throughout the United States last Tuesday were a few cases where civic-minded persons using new techniques and disregarding orthodox politicians who said "it can't be done," did get out an unprecedented number of voters and elected high grade officials to jobs that long had been held by incompetents. If the formulas of success in these isolated instances could be applied wholesale in the campaigns of 1952, the result might be the clear-cut majority we need for good government.

EDITOR-IN-CHIEF

**REAL TROUBLE AHEAD:** Meetings of the executive board of United Steelworkers of America-CIO in Atlantic City next Wednesday and its wage policy committee on Thursday and Friday may result in decisions of great impor-

tance to long-range policies of our government on inflation.

Everybody takes it for granted that USA will ask for wage increases far beyond reason. This is part of the bargaining technique of this cock-

eyed era. It is likely that employers and government will resist enough to convince the public that they are not willing conspirators in a deal that certainly will give fresh impetus to inflation. In setting the stage for the final showdown there will be wildcat strikes, probably more serious than the sporadic ones of recent weeks.

The important thing is that ailing Philip Murray holds a whip-hand over aspirants to his job who would be poison. Without him, CIO might disintegrate. —p. 47

\* \* \*

**MISAPPLIED MANPOWER:** Members of the National Tool & Die Manufacturers Association attending the annual convention at St. Louis were told that the 500 contract tool and die shops in the country need at least 5000 more skilled employees. At the same meeting, Col. Lewis F. Kosch, chief of the Manpower Division of the Selective Service System, advised tool and die employers not to count on holding men under 26 years of age. He likened the existing military manpower pool to a joint checking account upon which a number of persons are drawing without keeping each other informed.

This frank statement points to a situation that is bad and growing worse. More men are being inducted into some branches of the armed services than are needed. In too many cases, men possessing special skills are assigned to military jobs where these skills are wasted. Who gains when an expert in a metalworking shop dons a uniform only to be assigned to sorting mail in Korea? —pp. 53, 50

\* \* \*

**GERMAN AID FALTERS:** In September the West German government and the Scrap Dealers Association initiated an iron and steel scrap drive which was intended to ease shortages in several nations. The first 325,000 metric tons collected each month were to be reserved for German home consumption. The next 50,000 tons were to be exported—60 per cent to Great Britain and the United States and 40 per cent to other countries, including Sweden. Monthly collections exceeding 375,000 tons were to be divided equally between German home use and foreign buyers.

During the first month of the drive 327,000

tons were collected, of which only 2000 tons are earmarked for export in November. Only a few hundred tons of this will be available for the United States instead of the 15,000 or more tons that could have been counted upon if the drive had been as successful as anticipated. This disappointment is another good reason for putting more heat under our scrap drive here at home.

—p. 57

\* \* \*

**VERSATILE SALESMEN:** Inquiries directed to a number of representative metalworking companies have brought forth responses which indicate that while currently the need for direct selling of their products is limited, sales forces are as large if not larger than they were before the Korean flare-up and all salesmen are kept busy.

This is a wholesome situation because the day will come when intelligent, energetic sales effort again will be important. Right now sales personnel may not be "selling" in the orthodox sense, but salesmen are doing jobs other than selling that will make them better salesmen when keen competition returns. Some of the trouble shooting, expediting, pacifying, missionary work and other chores—some of them far beyond the ordinary call of duty—provide wonderful experience for the difficult days ahead.

—p. 58

\* \* \*

**HEAT DOES IT BETTER:** Hot spraying of lacquer is gaining ground rapidly, especially on numerous items of military equipment. Thinning lacquer by means of heat instead of by extra solvents has the advantage of fewer coats, less labor and less solvent. These more than offset the added cost of the equipment required for heating.

Indicative of the present upsurge in the popularity of hot spraying is the fact that at least 4000 heating units now are in operation in the finishing industry and that about 1500 of these were installed during the past year. Eight or more companies have developed and are marketing heating units designed especially for the hot spraying of lacquer. Practically all specifications of the Army, Navy and Air Force relating to coatings are being amended or adjusted to permit contractors to employ hot spraying on orders to which it is adapted. —p. 76

# Drive Starts on Steel Wages

The steelworkers this week formulate demands that promise to break the wage—and price—dikes. They may ask 25 cents and strike to bolster their stand

ORGANIZED LABOR, spearheaded by the United Steelworkers of America-CIO, this week starts its concerted drive to break the nation's wage—and price—formula.

Industry's consensus: The steelworkers will doubtlessly break a hole through the wage ceilings, which in turn will force increases in prices, but the victory won't be as easy or as decisive as many people now believe. That's because the steel companies have a good case against wage boosts and because the government, the ultimate arbiter in the steel case, is fed up with labor's antics since the Korean War started and won't be as lenient as it would have been 18 months ago.

**Facts of the Matter**—USA's executive board meets in Atlantic City, N. J., Nov. 14, and the wage policy committee convenes there Nov. 15 and 16. At those meetings will be hammered out what the union will ask the major steel companies on or before Dec. 1. Because of tactical considerations, the steelworkers may not make public immediately their cents-per-hour demands. Odds are that the union will present initial proposals that would cost the steel companies about 25 cents an hour per worker. On the 25-cent ticket will be 15 cents as an actual pay boost. The remainder will be made up in their demands

for six paid holidays and Saturday and Sunday overtime. To lessen the danger of public ill will, the steelworkers may claim that just 5 cents of the 15-cent boost is an actual increase and that 10 cents is for "the workers' increased speed and efficiency." Under existing laws and regulations, the steelworkers are actually entitled to just 3.9 cents more per hour.

The 25-cent package is a dicker figure, and Philip Murray and his steelworkers may settle for around 15 cents if the pressure gets great. Talks between union and steel company representatives probably won't reach agreements, largely because the steel companies don't want to shoulder responsibility for breaking the wage formula. The matter will be referred to the White House just before Dec. 31 when most steel contracts expire.

**Strike Possible**—To force the government's hand, the USA could call at least a token strike in January. It wouldn't last long and it might not be industrywide, but it would be used to get a quick decision from the Wage Stabilization Board or any other special panel set up to hear the case. Wildcat steel strikes, always common around contract negotiation time, have been hampering steel output for the last six weeks and will probably continue to do so until the whole

The bell is sounding for the next round in the fight for higher wages as Phil Murray's United Steelworkers of America meet to plan contract negotiation strategy. That complicated game of leapfrog between wages and prices will start anew if the government's wage-price formula is shattered.

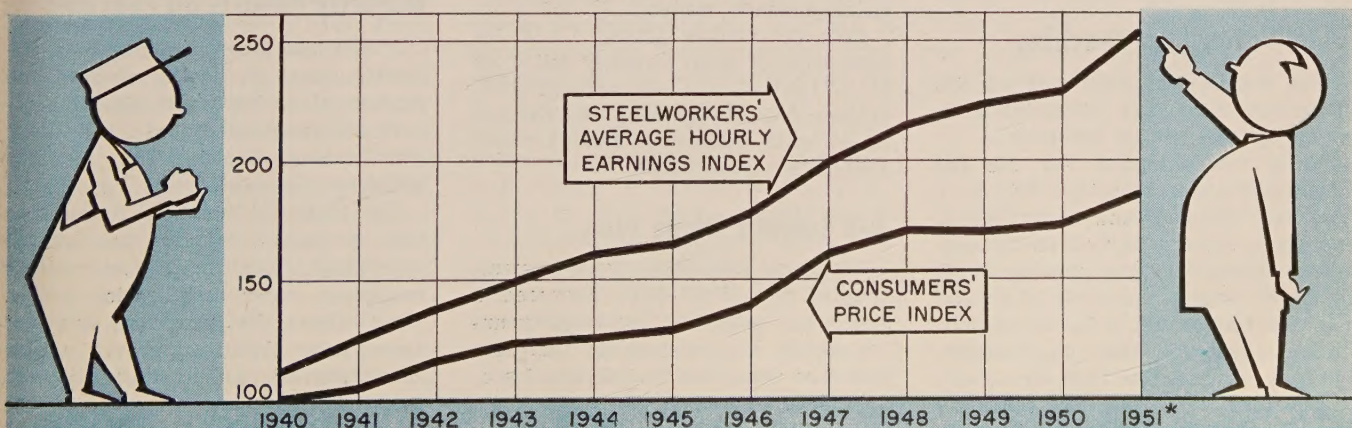
wage matter is finally resolved.

In the forthcoming negotiations between the steelworkers and the steel companies, the matter of the guaranteed annual wage will be brought up, but it won't be a life or death proposition and may fade out of the picture as talks progress. Pension questions are not expected this year, but the USA may talk about, but not press for, an escalator arrangement in pension funds to give the retired steelworker \$100 per month plus a sum commensurate with inflation since the pension agreements were signed. The steelworkers are going to be more persistent in demands for the union shop and elimination of wage differentials between the northern and southern steel districts.

**Pro and Con** — The steelworkers' major argument to support its demands will be the rising cost of living. The steel companies will counter to show that the wage increases for the industry have outpaced the consumers' price index (see the charts). Industry representatives can

## Steelworkers' Wages Outpace Cost of Living

(Base Period: 1935-1939 = 100)



\*Index computed on first 8 months of 1951 for steel earnings, first 9 months for prices. Price index prepared by Bureau of Labor

Statistics; steel earnings index by STEEL from American Iron & Steel Institute hourly pay figures.



**TEMPER, TEMPER:** Michael V. DiSalle, director of OPS, chats with Philip Murray, president of CIO, at the 13th annual CIO convention in New York. DiSalle asked labor to "temper demands" for more pay, but the CIO served immediate notice that it would fight for higher wages and liberal government rules on wages

also point out that steel earnings in the third quarter were 40 per cent below those for the same quarter a year ago and 30 per cent below the second quarter. Industry generally found its profits had dropped 25 per cent from the second to the third quarter this year.

Steelmen will argue that their profit drop will necessitate steel price increases in case the government does award the USA more than the 3.9-cent legal increase. That the steelworkers will win something is seen in WSB Chairman Nathan P. Finsinger's sad admission that it would be a "major miracle" if the board held the present wage line this winter. That the steel industry will gain price increases is hinted in the fact that OPS has already begun to survey the present steel price scale with an eye to the future.

## Steel Pattern Far-reaching

The outcome in steel will set the precedent for wage settlements in much of the rest of industry.

Many contracts not yet due for negotiation will be patterned after the steel decision, and a number of increases already agreed to by segments of industry but pending WSB approval may be modified to fit the mold or finally O.K.'d by the stabilization agency if they do conform.

Wage agreements that are pending before WSB include contracts signed by rubber companies granting 13 cents an hour to hourly employees and sliding scale provisions General

Electric Co. agreed to with its CIO electrical workers. The left-wing UE is holding out for more and, ironically could get it, to the chagrin of the CIO rivals, if the CIO steelworkers win decisive gains. GE gave the IUE a 2.5 per cent increase and a cost-of-living adjustment.

The steel decision could even affect the outcome of the protracted labor talks between the railroads and the firemen and engineer brotherhoods. A strike had been called on four railroads for last Thursday, but it was postponed for 60 days when President Truman moved in and invoked fact-finding provisions of the Railway Labor Act. That will move the rail strike deadline to January, when the steel case will also be reaching a climax.

John L. Lewis' contracts with the coal operators don't expire until Mar. 31; he may find the steel decision a handy wedge.

Sporadic strikes among UAW locals, some of them formally called by UAW leadership, some of them wildcaters, indicate growing restlessness in the auto union even though many contracts run until 1955.

## AFL Submits Wage Plan

American Federation of Labor members of the WSB have proposed a new wage policy for the country under which wage and salary increases would be permitted for increased production and efficiency.

The CIO board members last week had not endorsed the idea. That's indicative of a growing coolness be-

tween the two largest unions. At CIO convention in New York, President Philip Murray earlier turned down AFL proposals for merger.

## Tool, Die Makers Relieved

Tool and die makers are heaving sighs of relief now that WSB has turned down a proposal for especially high wage ceilings for about 75,000 workers in industry.

Tool and die men believe they will be protected against labor pirating by WSB regulations already in effect and that any special treatment would have been unwarranted. Wage inequities which had hampered tool and die shops and which had contributed to a pirating situation have been relieved by WSB rulings. Amendment 2 to General Wage Regulation 5 permits companies, including tool and die shops, to give merit increases. GWR 8 allows shops to pay a cost-of-living increase. GWR 17 sets up procedures by which raises can be given when there are inter-plant inequities.

## Engineers' Salaries May Rise

The Salary Stabilization Board will soon issue a new regulation to permit salary increases for engineers.

## Employment Steady

Employment conditions showed little change between September and October, according to the latest Census Bureau figures.

Total civilian employment is estimated at 61,836,000 in the week ending Oct. 13, about the same as in the week ending Sept. 8. Unemployment, which usually drops to a seasonal low in October, this year showed little change from September. But the October level of 1,616,000 was as low as any recorded in the postwar period.

## Majority Reports on Pensions

Public and labor members of a bipartisan panel on health, welfare and pension plans have just signed a report and submitted it to the Wage Stabilization Board. The industry members dissented.

The majority members recommend that pension programs be treated separately from health and welfare programs under stabilization policy. They believe that programs need not have prior WSB approval when Establishment or amendment of profit-sharing plans, approved by the Bureau of Internal Revenue, do not provide the payment of any immediate benefits prior to an employee's death.

retirement or permanent disability; amendments of existing pension programs do not require increased employer payments; the amendment of existing pension programs adjusts pension benefits either to maintain the same relationship between any such benefit and the costs of living or maintain the same relationship between any such benefit and wage and salary levels in the company; the establishment or amendment by an employer of a pension program is equivalent to an existing program in any of his establishments or the extension of an existing program to cover a new group of similar employees; the establishment or amendment of a pension plan does not exceed the limits of accepted industrial practice as evidenced by precedents established by a plan approved by the Bureau of Internal Revenue; establishment or amendment of a health and welfare program calls for providing life insurance by the term insurance or related form and does not permit payment of benefits before the insured reaches 65, dies or is permanently disabled.

The majority on the panel thinks that new programs that don't match any of the above conditions should be submitted to the WSB for approval.

## Materials Noose Will Be Tight Till July

**Even if mobilization's timetable remains unchanged there's little chance you'll get more steel, copper or aluminum in the first half**

COUNT ON little relief in steel, copper and aluminum supplies before mid-'52.

Relaxing of materials clamps even then assumes that the mobilization timetable will remain unchanged. On the basis of present defense requirements there will still be acute shortages lasting into 1953.

**Bitter Pills**—Worst situation will be in copper; it promises to be in short supply indefinitely. Aluminum will ease gradually after midyear as facilities now abuilding go into operation. Steel plates will be more abundant in late '52 as new mills start rolling. Structurals will be about as plentiful as hens' teeth till 1953. Most favorable change in the supply picture after next July: Steel sheets, from which most steel products are made.

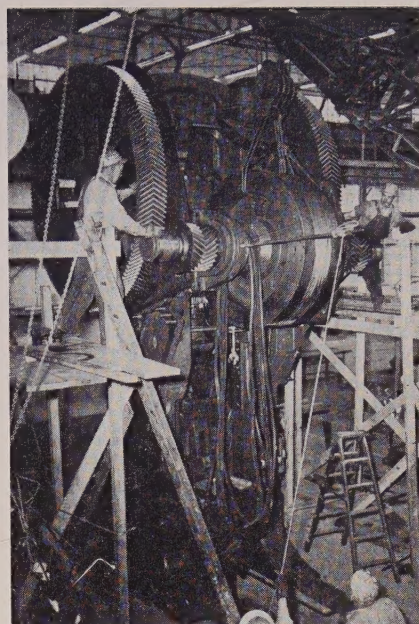
If the sensational aluminum expansion program continues unmolested, there will be about 60 per cent more aluminum in the first half of 1953 than at present. NPA is now studying possible substitutions of aluminum for copper, with a view to making

The industry members dissented from the majority findings, because they thought them too broad.

### Tempest in a Teapot

An erroneous impression has appeared in some new papers that WSB has approved a new incentive plan at Jones & Laughlin Steel Corp. which will allow workers to increase their earnings as much as 35 per cent.

WSB did no such thing. It simply gave J & L permission to return to an old type of incentive pay plan which had been in effect for some years before 1949. Under that old plan, as under any incentive system, a worker was paid an amount over his standard hourly rate varying according to his output. In 1949 the company instituted a new and slightly different plan. Only 7 per cent of J & L's 10,000 incentive-pay workers have transferred to the 1949 system. Experience has shown that under the new plan some workers can't earn the expected 35 per cent above the standard hourly rate, which a normal worker is supposed to get. J & L petitioned to return to the old plan, with some modifications, to assure that the average worker can reach the 35 per cent figure, a normal one for most incentive systems.



**BLISSFUL:** Indicative of the aircraft industry trend toward heavier machinery to make stronger, larger parts for faster, bigger planes is this mammoth press. It was built to Lockheed Aircraft Corp.'s specification by E. W. Bliss Co. The 1000-ton impact press will quick form parts made of aluminum alloys and will save about \$50,000 a year, Lockheed estimates

meet military schedules. That's true in itself, government men concede, but how about the increase in defense-support activities? They need increased quantities of steel too. This is not only a direct military program, they say, but a mobilization program, with ships, power plants, mines, petroleum products, etc., just as necessary as guns and airplanes. One official puts it this way: "The furnace in a defense worker's home at Oak Ridge is as important to the mobilization program as a piece of equipment for the Oak Ridge laboratory."

One important lesson was learned from over-allotment of CMP materials in third and fourth quarters of this year: Rate of attrition of allotment isn't so great now as it was during World War II. Allocations this year have been about 112 per cent of production, same rate that proved realistic before. In light of recent experience this figure will probably be reduced to 110 per cent of production. The change would apply to second quarter allotments—it's already too late to modify first quarter allowances, except for plates and structural shapes. NPA, finding attrition rate in these products is considerably less than in most other steel products, will cut first quarter allotments of these forms sharply.

**Pyramid's Base**—The steel indus-

these effective in the third quarter of next year. "If I were a manufacturer and using large amounts of copper," says NPA Administrator Manly Fleischmann, "I would have my design people work up substitutions of aluminum for copper wherever possible."

**Barter**—Possible source of badly needed structural steel shapes (particularly for highways and schools) is seen in surplus British capacity. Government officials are now working up a deal to swap some high-priced conversion steel ingots from a West Coast producer for heavy structurals.

A scheme for control of steel product mix to insure availability of enough steel in each form to fill first quarter CMP allotments is currently being studied by NPA. Production directives would be issued to balance the total of first quarter allotments.

**For the Record**—Misunderstanding has resulted, say government officials, from steel industry statements that the 18.5 million ton steel expansion program will by itself be sufficient to

try won't have many expanded facilities ready for operation until well after their original completion dates. That's because the industry isn't getting enough of its own product to maintain construction schedules. Only 51 per cent of the structurals and plates needed are being received. Gaps here will start to be filled in the third quarter of 1952.

Components shortages have caused a lot of hair-tearing, not only in machine tools but in other types of assembly as well. Badly needed machine tools, completed except for a chuck or some other part, are accumulating at builders' plants. NPA is considering adoption of a system of directives to control production of all components.

### Fourth Quarter Booked Solid

If you have not succeeded in placing your CMP fourth quarter steel allotment, the chances are that you will be unable to do so.

Frank T. McCue, assistant to the director, NPA Iron and Steel Division, who was designated several weeks ago to look into this matter, says that efforts to help consumers to find a home for their tickets have not been as fruitful as originally hoped, and from now on the result of such efforts will be negligible. This is because mills generally are booked solid through the fourth quarter; many of them, in fact, will take carryovers into the first quarter.

Mr. McCue has this word of caution: "Many consumers got into trouble in the fourth quarter by attempting to get on mill schedules whereas they normally buy from warehouses. Their purpose, of course, was to enjoy price and freight advantages. The majority of them failed to get their allotments accepted by the mills and in the meantime lost their chances of early deliveries from their regular warehouse sources."

Says Mr. McCue: "This is a poor time to replace one source of supply with another. If normally you are a warehouse customer, you will be wise to continue to rely on your warehouse. By so doing you are almost certain to get your steel—for NPA directives, recognizing the importance of the warehouse in the present emergency situation, provide for distribution of an estimated 19 per cent of the entire steel output through the warehouses."

### Construction Volume Drops

Shortages of material retarded almost all kinds of building in October, resulting in a more than seasonal decline, says the Building Materials

Division of the U. S. Commerce Department.

Total value of new construction put in place in October amounted to about \$2.7 billion, off 5 per cent from the September total and 3 per cent less than the October, 1950, total. New homebuilding increased slightly. Military and defense plant construction showed further moderate increases. But delays in construction projects extended to the basic steel and electric power expansion programs.

Construction came completely un-

der CMP Oct. 1. When supplies of controlled materials on hand before that date are used up, the amounts of various types of building that can be carried on will depend largely on allotments of steel, copper and aluminum. Structural steel was the principal limiting factor in October; it will probably continue to be so for the remainder of the year. Within a short time, though, availability of copper items may supersede structural steel as the determining factor in the volume of construction activity attained.

## Pig Iron Must Shoulder Scrap Load

**Coke and pig iron expansions in long-term balance, says steel industry, but chronic scrap shortage would raise hob-**  
**with blast furnace program**

THE SCRAP shortage is worsening.

Thus far little steel ingot or casting production has been lost because of it, but the danger mounts as winter, the season for lower scrap collections, comes upon us with an unusual rush when stocks are exceptionally low.

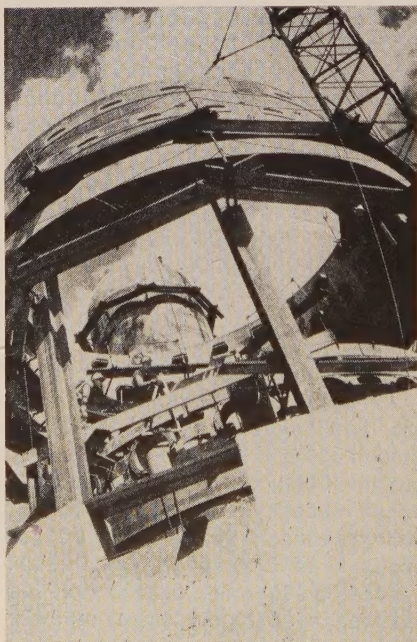
**Short-Lived?** — Scrap shortages are usually short-lived affairs because the bellows action of higher prices or great publicity about the problem can usually bring out dormant material. But now prices are frozen, the bad weather is cutting valuable weeks off the high collection season and the government is moving at a snail's pace to return to the scrap cycle battlefield material lying around in

the South Pacific and in Korea.

On a near-term basis, the scrap difficulties are having serious effects on pig iron supplies. For the past month or two pig iron has been a little easier to get, partly because of reduced activities in foundries, but now iron is tightening again as the pig iron ratio in open hearths goes up to counterbalance lower scrap tonnage.

**Chronic?**—If the scrap scarcity becomes chronic, or at least lasts for the next two years, it will raise havoc with the steel industry's entire blast furnace expansion program. Even figuring on a quick easing in scrap supplies, the government is charging that steel companies haven't expanded their pig iron—and coke—capacities commensurately with their steelmaking potentials (STEEL, Oct. 1, p. 35). In a query on that subject, STEEL interviewed every major steel company in the U. S. on the government allegation. All say that as far as their own operations are concerned, their blast furnace, coke oven and steelmaking expansions are in balance on a long-term basis. But many also point out that a chronic scrap shortage would unbalance the situation, and the government charge, as far as pig iron is concerned, would turn out to be correct. Coke would not be affected. A few coke oven and blast furnace operators admit that a coke and iron imbalance conceivably could develop over the long pull when foundry needs are figured in the whole situation.

As the expansion picture now shapes up, these capacities will be available by mid-1953: Pig iron and ferromanganese, 82 million net tons, compared with 72.6 million tons as of last Jan. 1; coke, 77 or 78 million net tons, compared with 72.5 million



REPUBLIC'S HIGH PRESSURE STACK  
... more pig iron with less coke

us of last Jan. 1; steel ingots, 118 million tons, compared with 104.5 million as of last Jan. 1. Government people figure we'll have a shortage of about 6 million tons of pig iron and about 3 million tons of coke by 1953.

**The Big "If"**—Many steel industry experts think those estimates are high—if we escape a chronic scrap shortage. They point out that the industry is switching rapidly to the high top pressure blast furnace technique which boosts the output of the unit about 12 per cent without increasing its size and lowers the consumption of coke about 10 per cent. Republic Steel Corp. has converted 7 of its 21 blast furnaces to pressure blowing and an eighth unit is abuilding that will incorporate the system. Armco Steel Corp. and Great Lakes Steel Corp. are installing the system; U. S. Steel Co. is considering it for its Fairless Works furnaces. Another factor that will boost blast furnace output without the need to enlarge the unit is richer iron ores, now coming in greater quantities from Venezuela and Liberia and in the form of taconites from the Lake Superior region.

Nevertheless, Washington people are still concerned about a shortage of furnaces and ovens. "We are negotiating with five or six companies to get them to launch new pig iron and coke expansions on the basis of a liberal tax-treatment incentive, and possibly with government loans," a spokesman told STEEL. At least one steel company is going ahead with coke and steel expansions in addition to the ones already figured in the original 1950-1953 steel program. Bethlehem Steel Co. has authorized \$40 million for further expansion. Part of that sum will be used to boost capacity of two blast furnaces and to rebuild some coke ovens at Sparrows Pt., Md.

## Follansbee Steel To Expand

Re-entry into the field of primary steel production is being made by Follansbee Steel Corp.

It was granted a government certificate of necessity for a \$33 million expansion program which will provide a new electric furnace melt shop, new blooming mill and a continuous hot strip mill. The new facilities will be built at Follansbee, W. Va., adjacent to the company's present plant.

Now that the company has a certificate of necessity it is studying means of financing and engineering details of the operating equipment.

M. A. Follansbee, president, told STEEL the company contemplates ei-

ther five or seven 70-ton electric arc furnaces to produce ingots for rolling. The blooming mill will supply a four-stand or five-stand 54-inch four-high strip mill whose monthly estimated production will be around 50,000 tons.

The total expenditure will include yards, docks, cranes, buildings and electrical installations as well as necessary auxiliary equipment.

Plans call for completion of the program by late 1954 or early 1955.

Follansbee Steel formerly produced steel in four open hearths at Toronto, O., but disposed of them and the other equipment there at the end of 1949. That plant is now the Ohio River Steel Corp.

Follansbee Steel also had disposed of hand sheet mills at its Follansbee, W. Va., works, leaving only cold strip mills in operation.

## More Power for Ohio Works

A \$9 million steam and electric power plant will be built by U. S. Steel Co. at its Ohio works in Youngstown.

Plans include the installation of two steam boilers fired by blast furnace gas which will increase present steam producing capacity eight-fold. Coupled with existing electricity supply will be a 15,000-kilowatt turbogenerator—enough to furnish power for both Ohio works and the nearby McDonald plant.

U. S. Steel recently made extensive blast furnace and open hearth improvements at the Ohio works, boosting steel capacity by 160,000 tons a

year and pig iron capacity by 212,000 tons a year.

## U.S. Steel Reorganizes

**Changing its corporate setup, U.S. Steel hopes to get lower costs and improved production**

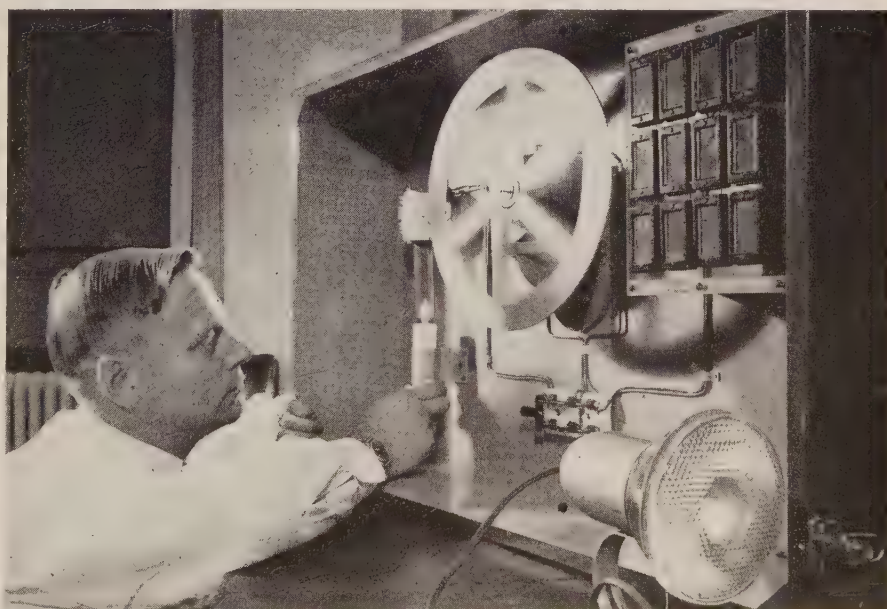
U. S. STEEL Corp. will take a big step in its trend toward becoming an operating corporation on January 1, 1952.

On that date, wholly owned subsidiaries in mining and steel production, fabrication and distribution activities will become general operating divisions of U. S. Steel Co., the major subsidiary of U. S. Steel Corp. involved in the change.

**Names Will Change**—Names of most of these new operating divisions will correspond with those of the present subsidiaries. Thus, American Steel & Wire Co., will become American Steel & Wire Division; Bradley Transportation Co. will henceforth be Bradley Transportation Division, etc.

Present head of each subsidiary will continue in most instances as president of the new general operating division, with his headquarters remaining in its present location. The reorganization is entirely internal among 100 per cent owned subsidiaries and will affect neither present customer relationships nor change the present stock interests of the stockholders of U. S. Steel Corp.

This effort by U. S. Steel is part of a program to simplify its corporate setup. Begun a year ago, the plan



**WORK WANTED:** A small device, the Sun Motor, demonstrates that sunlight can be put to work. The light gives enough electric energy to spin the balsa wood wheel on the shaft of a small motor. Unsolved are the problems of efficient conversion of sunlight into power. The Sun Motor is part of General Motors Corp.'s "Previews of Science" shows

is to keep the corporation up-to-date and thereby reduce costs and improve production.

## Anaconda Takes Over Kalispell

Anaconda Copper Mining Co., one of the world's biggest producers of the red metal, is entering the aluminum business. It will take over commitments of Harvey Machine Co. Inc. of (Torrance) Calif. to build a plant at Kalispell, Mont., for aluminum ingot production.

The plant will cost about \$46 million and will have an initial capacity of 54,000 tons yearly. Anaconda is forming a new Montana company in which Harvey will have a small interest. Harvey, too, was forming a Montana Co., when its government loan was held up at the request of the Interior Department (STEEL, Sept. 24, p. 68). Anaconda will finance the project without government funds. It is understood, though, that it got a certificate of necessity entitling it to accelerate amortization of building costs.

Anaconda will get its bauxite concentrate from other companies in this country. It is not going to build an aluminum plant nor is it planning to build ore boats as Harvey Machine had intended to.

## Rust Gets Ford Slab Contract

Rust Furnace Co., Pittsburgh, received a contract to build a new slab heating furnace for Ford Motor Co.'s Steel Division at its Rouge plant. The new facility will supplement two furnaces now serving the plant's hot strip mill. It will increase the mill's rolled strip capacity to an estimated 300 tons per hour.

## Allotment Appeals Turned Down

Denials continue the rule with the NPA Appeals Board in passing on requests for larger allotments of controlled materials. The invariable criterion is whether the shortage of material complained of in each case is hindering the national defense programs.

In latest cases, Louis-Allis Co., Milwaukee, requested more carbon steel, stainless steel, copper and aluminum for manufacture of electric motors; BMC Mfg. Corp., Binghamton, N. Y., asked more steel for children's tractors, autos, racers and wagons; Liebmenn Breweries Inc., Brooklyn, N. Y., requested tin plate for beer cans; Elkay Mfg. Co., Chicago, requested permission to use nickel steel in manufacture of sinks; Victory Packing Co., Los Angeles, asked for an over-quota supply of cans for animal and pet food. All were denied.



**THE MEN BEHIND THE JETS:** A wide-spread group of subcontractors aid in the production of Westinghouse turbojet engines, which involves nearly all the metalworking skills devised for a mass-production economy. These main production aisles are almost a quarter of a mile long at the Westinghouse plant at Kansas City, Mo.

## Good Prospect for Subcontractors: Ammunition Parts

COMING up are greater subcontracting opportunities for ammunition parts.

That may be deduced from remarks by Brig. Gen. Merle H. Davis who spoke before a regional meeting of the American Society of Tool Engineers in Evansville, Ind. He points out that the substantial ammunition stocks we had at the start of the Korean War are diminishing and that ammunition is being consumed faster. So, he says, "the time has come for the ammunition industry to really start producing." He cautions that ammunition subcontracting may be a more exacting job now than during World War II because requirements today are more complicated.

Underlining General Davis' remarks, American Cladmetals Co., Carnegie Pa., announces that it will start production of 0.50 caliber bullet

jacket cups in 1952. Cladmetals manufactures bullet jackets for jet planes, for shielding electronic communication systems from interference and for motor radiators and now being produced by American Cladmetals Co. The cladding of soft metal, such as copper, on a steel base prevents the rifling in the barrel from being destroyed as the bullet rides through.

Also awarded were contracts for 35 Landing Ships—Utility to four small business firms by the Navy Department. The four firms are Island Dock, Inc., Kingston, N. Y., Reynolds Ship Repair Inc., Buffalo, N. Y., Marietta Mfg. Co., Point Pleasant, W. Va., and Port Houston Industries, Houston. The LSUs will be basically the same as the World War II LCTs, though slightly longer.

Other contracts awarded by the government, in excess of \$250,000

Product	Contractor
Broaching Machines	R. K. LeBlond Machine Tool Co., Cincinnati
Boring Machines	R. K. LeBlond Machine Tool Co., Cincinnati
Machinery & Equipment	General Electric Co., Lockland, O.
	Niles-Bement-Pond Co., Chandler Evans Div., Hartford, Conn.
Cranes	Bay City Shovels Inc., Bay City, Mich.
Hoisting & Rotating Units	M. L. Bayard & Co., Philadelphia
Road Graders	Rome Grader Corp., Rome, N. Y.
Crane Equipment	Thew Shovel Co., Lorain, O.
Tools & Equipment for F-84F	Republic Aviation Corp., Farmingdale, L. I., N. Y.
Damper Assemblies	Grumman Aircraft Engineering Corp., Bethpage, L. I., N. Y.
Major Components for Radar Sets	General Electric Co., Syracuse, N. Y.
Repair Parts for Turbines, etc.	Dravo Corp., Philadelphia
Repair Parts for Aircraft	United Aircraft Corp., Chance Vought Aircraft Div., Dallas
Spare Parts for Gun Mounts	Miller Printing Machinery Co., Pittsburgh
Spare Parts for M1 Rifle	International Harvester Co., Evansville, Ind.
Spare Parts for Tractors	Caterpillar Tractor Co., Peoria, Ill.
	R. G. LeTourneau Inc., Peoria, Ill.
Work Tables	State Hardware Co., Philadelphia
Folding Chairs	Richmond Radiator Co., New Castle, Del.
Fuzes	Casco Products Corp., Bridgeport, Conn.
Receiver-Transmitter (6 contracts)	Federal Telephone & Radio Corp., Clifton, N. J.
Radio-Receiver (2 contracts)	Federal Telephone & Radio Corp., Clifton, N. J.
Transmitting Sets	Collins Radio Corp., Cedar Rapids, Iowa
Amplifiers (3 contracts)	Federal Telephone & Radio Corp., Clifton, N. J.
Handsets	Connecticut Telephone & Electric Corp., Meriden, Conn.
Control Groups (3 contracts)	Federal Telephone & Radio Corp., Clifton, N. J.
Control Boxes	Automatic Mfg. Corp., Newark, N. J.
Control Units	Gray Mfg. Co., Hartford, Conn.
Radio Mountings	Federal Telephone & Radio Corp., Clifton, N. J.
Jack Assemblies	Kellogg Switchboard & Supply Co., Chicago
Signal Generators	Measurements Corp., Boonton, N. J.
Radio Tubes	Radio Corp. of America, RCA Victor Div., Harrison, N. J.
	Raytheon Mfg. Co., Power Tube Div., Waltham, Mass.

## ut Where To Get Them?

**Contract tool and die shops need at least 5000 more skilled employees**

**CONTRACT** tool and die shops need at least 5000 more skilled employees. If requirements for captive shops are added, the scarcity would be even worse, delegates heard at the annual meeting of the National Tool and Die Manufacturers Association in St. Louis.

**Cold Comfort**—More than 300 delegates representing the 500 contract tool and die shops which now make up the association, got cold comfort from Col. Lewis F. Kosch, chief, Manpower Division, Selective Service System. He likened the existing military manpower pool to a joint checking account upon which a number of persons are drawing without keeping each other informed. He advised the tool and die men not to count on holding men under 26.

As moderator of a panel discussion on training for tool, die and machine shop occupations, DeForrest Pratt, director of training, Cincinnati Milling Machine Co., emphasized that such training is a long-term job which must be budgeted accordingly.

New officers of NTDMA for 1951-52 who were introduced at the closing session of the St. Louis meeting are: president, Randolph H. Cope, who is vice president and manager of Bunell



**RANDOLPH H. COPE**  
... newly elected president of NTDMA

Machine & Tool Co., Cleveland. First vice president, Alfred Reinke, who is president of Gus Reinke Machinery & Tool Co., Hillside, N. J. Second vice president, Herbert C. Murrer, who is president of Murrer Tool Co., Cincinnati. Treasurer, Herbert Harig, who is vice president and treasurer of Harig Mfg. Co., Chicago. Secretary, Joseph N. Huser, who is president of B & H Specialty Co., Indianapolis. George S. Eaton was re-appointed executive secretary with headquarters at 906 Public Square Bldg., Cleveland.

## oolbuilders Told To Prospect for Subcontractors

**EVERY MACHINE** tool company today should go prospecting for subcontractors."

So says Richard E. LeBlond, president of R. K. LeBlond Machine Tool Co. and retiring president of the National Machine Tool Builders' Association, who spoke at the group's 50th annual meeting in Hot Springs, Va., last week.

**The Start**—The place to start, he thinks, is among the builder's own customers, where the people and equipment are known. He believes that subcontracting is the quickest and most practical means of boosting machine tool production.

Mr. LeBlond told his fellow machine tool builders that they have nothing to fear on the score that many subcontractors may elect to stay in the machine tool business and compete in an industry which during peaceful times already has plenty of competition. He reported: "All the subcontractors I have talked to wonder how they can possibly sell machine tools at the prices we do and make a profit."

**Foreign Tools**—Kermit T. Kuck, vice



**FREDERICK S. BLACKALL**  
... newly elected president of NMTBA

to the International Machine Tool Show in Paris in September.

Mr. Kuck believes that the European machine tool is a quality product, usually well engineered, which will give strong competition on world markets to American machines when and if normal trade patterns return.

## CHECKLIST ON CONTROLS

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, write to NPA Distribution Section, First Basement, New GAO Bldg., Washington 25. For copies of OPS orders, contact nearest OPS district or regional office. For copies of OPS news releases, write David S. Phillips, director, OPS Administrative Services Division, Temporary E Bldg., Washington 25.

### Materials Orders

**ALUMINUM**—NPA Order M-88, effective Nov. 1, 1951, is to aid distributors and warehouses in replacing their stocks of aluminum. Distributors are authorized to order in each month the same quantity of each form and shape of aluminum which they delivered during the preceding month.

**STEEL**—Amendment of Nov. 1, 1951, of Direction 3 of NPA Order M-1 permits steel companies to sell 100 per cent of their output on a pick-and-choose basis, in all but the last 15 days of lead times. If their order books are not filled by the last 15 days, they must accept in those 15 days all authorized controlled materials orders offered them until their order books are full.

**COPPER**—Amendment of Nov. 2, 1951, of Direction 2 to NPA Order M-11 allows copper producers to sell 100 per cent of their output on a pick-and-choose basis in all but the last 15 days of lead times. If their order books are not filled by the last 15 days, they must accept in those 15 days all authorized controlled materials orders offered them until their order books are full. Notice of acceptance or rejection of orders must be given promptly. Order books for a calendar quarter must be opened not later than 90 days prior the first day of the quarter.

### NPA Regulation

**TRANSFER OF QUOTAS**—NPA Regulation 6, effective Nov. 5, 1951, spells out conditions under which a company's priority ratings, materials quotas and other authorizations granted it by NPA may be transferred, along with its other assets and obligations, when it is sold as a going concern to a new owner.

### Price Regulation

**BROWN IRON ORE**—Revision 1 of Supplementary Regulation 41 of the General Ceiling Price Regulation raises price ceilings 2 cents a long dry unit (22.4 pounds) on brown iron ore produced in Alabama, Florida, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia. This increase is equivalent to one granted last July to brown iron ore producers in Georgia.

## Army seeks to stop buckpassing, tells brass: "Don't Equivocate." Harriman has free rein on spending \$7.3 billion. National Science Foundation scaled down

THE ARMY is making a strong attempt to wipe out the old Army institution of "pass-the-buck."

It's telling junior officers and civilian assistants to make positive recommendations when reporting findings from assigned studies. Normal tendency is to pussyfoot when reporting to the boss. That's the thing the Army seeks to checkmate. It is striving toward this objective by saddling responsibility not only on top brass but on their subordinates. How the system is supposed to work is indicated by the following instructions to follow upon the assignment of a problem:

1. Work out all details completely.
2. Consult other staff officers.
3. Study, write, restudy, re-write.
4. Advise the chief what to do. **DON'T ASK HIM!**
5. Prepare a single, coordinated, proposed action. **DO NOT EQUIVOCATE!**

6. Do not present long explanations or memoranda. Correct solutions are usually recognizable.

"If you were the chief, would you sign the paper you have prepared, and thus stake your professional reputation on its being right? If not, take it back and work it over; it is not yet completed staff work."

### New Santa Claus . . .

After serving the administration in a number of important capacities, W. Averill Harriman has attained the glamor-boy status last enjoyed by Paul Hoffman during the years the latter headed the fabulous Economic Cooperation Administration. As the Director for Mutual Security Mr. Harriman will direct the spending of the \$7.3 billion appropriated by Congress for fiscal 1952 for mutual security purposes "without any further action by the President, and the

funds may be allocated by the Director for Mutual Security to any agency, establishment, department or wholly-owned corporation of the government" etc.

Under an executive order, he has an equal voice with the secretary of state and the secretary of defense in determining the economic and military assistance policies under which this money will be spent. Up to \$2 billion of the total will be spent in foreign countries—making him the world's No. 1 Santa Claus. In the alphabetical language of Washington ECA no longer will have a place after Dec. 31. On Jan. 1 the old Economic Cooperation Administration will be replaced by the new and far more comprehensive Mutual Security Agency.

### Research Limited . . .

Because Congress appropriated only \$3.5 million of the \$14 million requested, the National Science Foundation had to scale down its program for the initial year of its existence. Two groups of expenditures are of special interest to industry—\$1,350,000 for training of scientific manpower, and \$1,500,-

000 for basic research in biology, medicine, mathematics, physical sciences and engineering.

Basic scientific research support is to take the form largely of research grants; no such grants have been made but several are under consideration. Grants of interest to the metals industry come under Dr. Paul Klopsteg, head of the Division of Mathematical, Physical and Engineering Sciences. The National Science Foundation has established its permanent headquarters at 2144 California St. N. W., Washington.

### Boom in Boron . . .

Boron-treated low-alloy and carbon steels as substitutes for higher-alloy steels are taking hold nicely, informed NPA officials say. Output in November will be about 37,000 tons, compared with 35,000 in October. A good many consumers have learned how to use them and expect to continue specifying them as long as the alloy shortage lasts. Other consumers have test programs under way.

The most popular use of boron-treated steels involves the low-nickel-chromium-molybdenum specification 94B17. About 75 tons of this steel, boron-treated, is being used monthly for production of carburized gears.

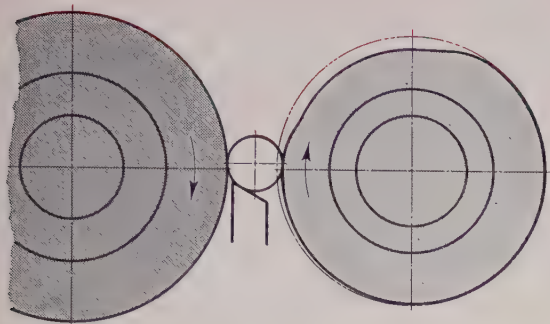
### Pain in the Pocketbook . . .

One salutary act of the 82d Congress at its first session was the elimination of the "tax-free" limit on the expense money paid to congressmen and top government officials—\$50,000 to the President, \$10,000 each to Vice President Barkley and Speaker Sam Rayburn, and \$2500 to each representative and senator. On the one hand congressmen talked of promoting ethics in government and investigated minor government employees accused of accepting improper payments or other rewards in favors granted. On the other hand they were setting the bad example of exempting themselves from the taxes paid by the run of citizens.

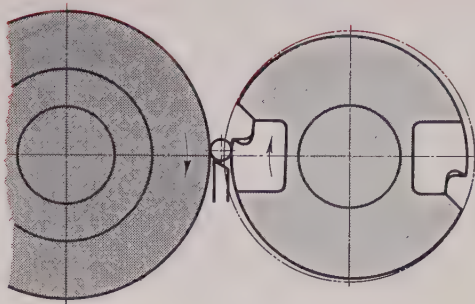
### WHICH ARE YOU?

NPA OFFICIALS are accustomed to dealing with tough-minded industrialists who bring powerful pressures to bear for more steel, copper and aluminum than they are able to get under the Controlled Materials Plan.

The Agency was stopped cold a few days ago in dealing with a spokesman for the toy train industry. More steel, he said, is needed by that industry than it is getting. "It simply boils down to this," he told the NPA men. "Either you are for the kids in this country, or you are against them."



Cammed regulating wheel. Work is loaded and ejected at low section of wheel. Production per minute = rpm of regulating wheel.



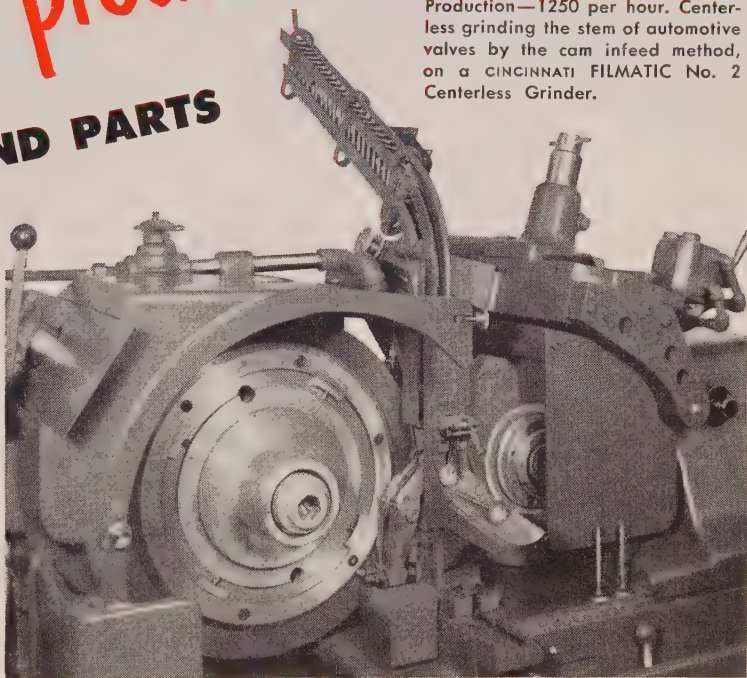
Double cammed regulating wheel, notched for loading and ejecting the work. Production per minute = 2 x rpm of regulating wheel.



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Production—1250 per hour. Centerless grinding the stem of automotive valves by the cam infeed method, on a CINCINNATI FILMATIC No. 2 Centerless Grinder.



Have you considered automatic centerless grinding for your precision ground parts? The equipment illustrated here, developed by Cincinnati, shows what can be done. A CINCINNATI FILMATIC No. 2 Centerless Grinder is equipped with an automatic loading device and a cammed regulating wheel. This method of precision grinding (diagramed above) offers several advantages . . . very low cost . . . high rate of production . . . excellent finish . . . accurate sizing . . . elimination of slideway wear. For today's defense work . . . for future applications when the pressure on machine tools eases a bit . . . the cammed infeed method of centerless grinding is worth serious consideration by cost-conscious engineers in high production plants.

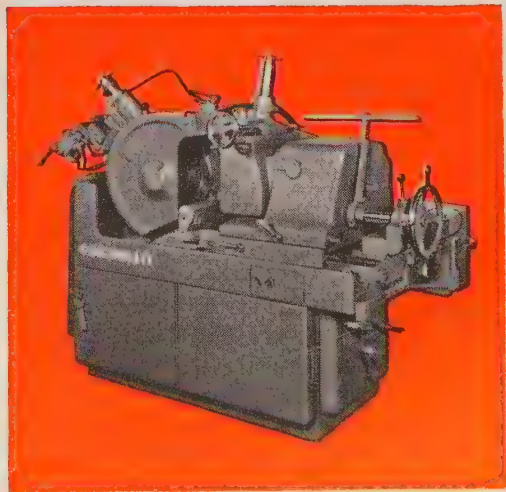
**CINCINNATI GRINDERS INCORPORATED**  
**CINCINNATI 9, OHIO**

CINCINNATI FILMATIC No. 2 Centerless Grinding Machine. Complete specifications may be obtained by writing for catalog No. G-591.

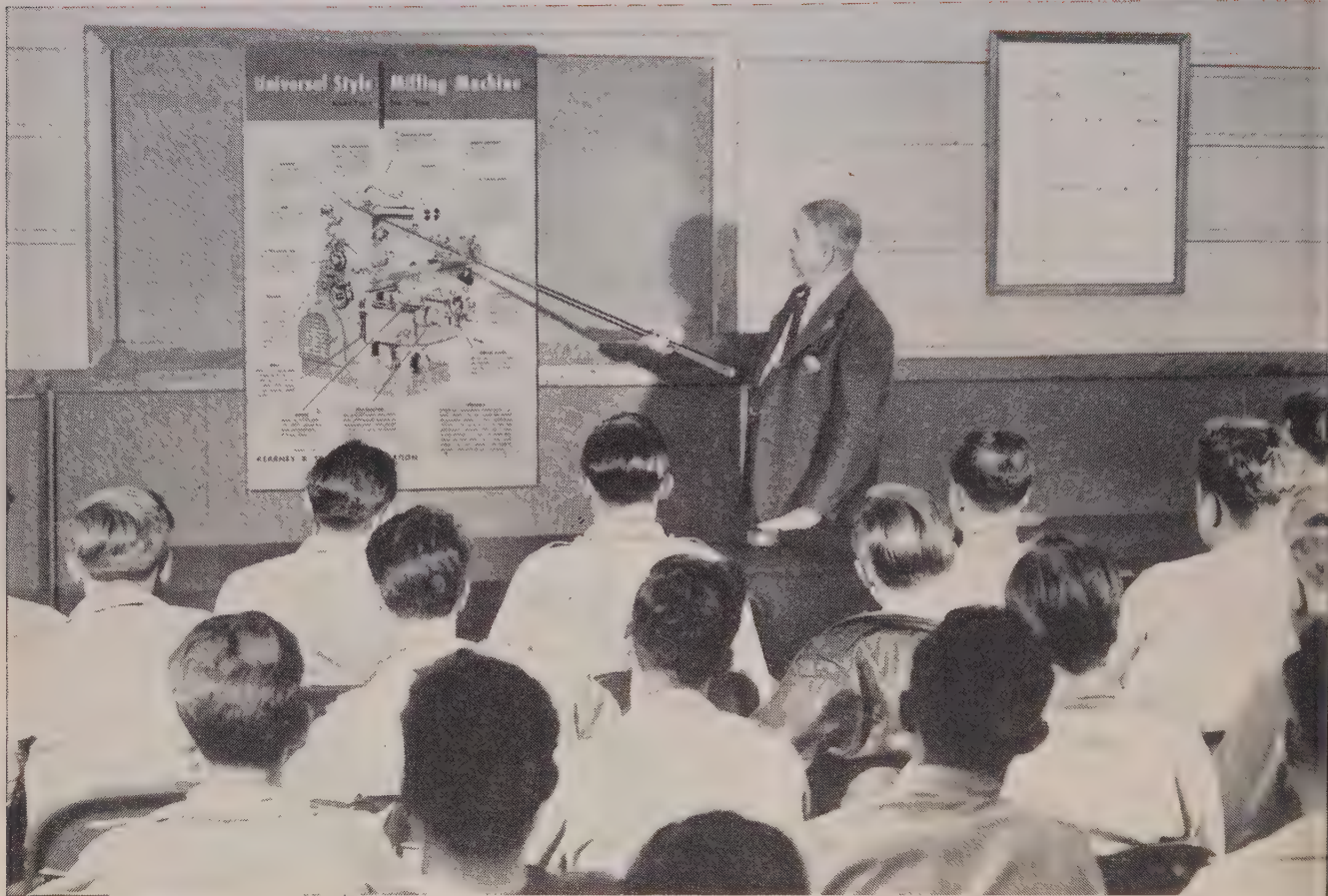


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# HOW TO SPEED UP TRAINING OF MILLING MACHINE OPERATORS



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**MACHINE TOOLS**



# U.S. Hit by Ruhr Scrap Drive Failure

**American consumers had high hopes for several thousand tons of German scrap a month, but a Ruhr campaign to dig up the material was largely a flop**

A GERMAN iron and steel scrap drive has failed, and American buyers are left high and dry.

U. S. users had been hoping for several thousand tons of the material a month; now it looks as if they'll be lucky to get any.

**The Background**—High hopes for the success of the drive were based on the fact that the West German government promised to go to extraordinary lengths to assure its favorable outcome. The republic's officials were co-operating because they wished to prove they were wholeheartedly committed to the free nation's push for greater industrial production. The Bonn government and the Scrap Dealers Association spent nearly \$225,000 to publicize and further the scrap campaign. They both also wanted to deliver on a scrap trade agreement signed in September.

Under terms of that pact, the first 325,000 metric tons of the monthly collection would be reserved for German home consumption. The next 50,000 tons would be exported—60 per cent to the U. S. and Great Britain and the remaining 40 per cent to other countries, mainly Sweden. For all monthly collections over 375,000 tons, half would go to Germany, half to foreign buyers. In the first month of the scrap drive, just 327,000 tons were collected, leaving only 2000 tons for export in November. The U. S. share in that will be less than 1000 tons.

**Keystone**—West Germany is crucial to the whole Western European scrap situation because it's the only nation that has, or was thought to have, substantial surplus supplies. If the country could have delivered 50,000 tons a month for export, the U. S. would have received some 15,000 tons every 30 days, a godsend in these times. The scrap campaign will continue in the Ruhr, but now not much can be expected of it.

Scrap dealers in West Germany and other European nations claim that more material could be pried loose if ceiling prices are removed, or at least relaxed. Ceilings on German scrap average \$21 per metric ton; they're \$24 on foundry grades. Gray and black market prices are from two to three times the legal quotations. The highest offers are coming from Belgian buyers. An estimated 20 per cent of all scrap now sold in

Western Europe is moving on the black market.

## Germans Await Ramifications

West Germans are braced for serious ramifications of their failure to raise much iron and steel scrap for export.

Aside from raising the ire of Great Britain and the U. S., the defection may cost them Swedish and Austrian iron ore. Under terms of a trade agreement with Sweden, that nation is supposed to get 100,000 tons of German scrap. The Germans are already 40,000 tons behind in their deliveries, and the Swedes may retaliate by curtailing ore shipments. Austrians may do the same thing. In August and September, the Ruhr imported 1.1 million net tons a month, about double average monthly shipments earlier in the year.

But there's still not enough ore—and scrap—for domestic use, and steel production has slipped lately. Iron and steel will be allocated soon to the 60,000 consumers in the country. About 15 per cent of German steel output is going into the black market. Recognizing that legal prices are too low, Bonn permitted the steel industry to raise them, effective Nov. 1, an average of \$8.44 per metric ton.

Hardest hit by the steel shortage are shipbuilders who can't begin to

get all the 42,000 tons they need monthly.

## Scrap Drive More Successful

The British have greater success with their scrap drive than have the Germans.

Enough of the material has been recovered in the United Kingdom to forestall extensive shutdowns, but the situation is still nip and tuck. The nation's steel production target of 17,920,000 net tons this year won't be achieved because of the lack of scrap—and coke. A bill for denationalization of the British steel industry will go before the House of Commons in February, Winston Churchill promises.

## French Steel: More and Better

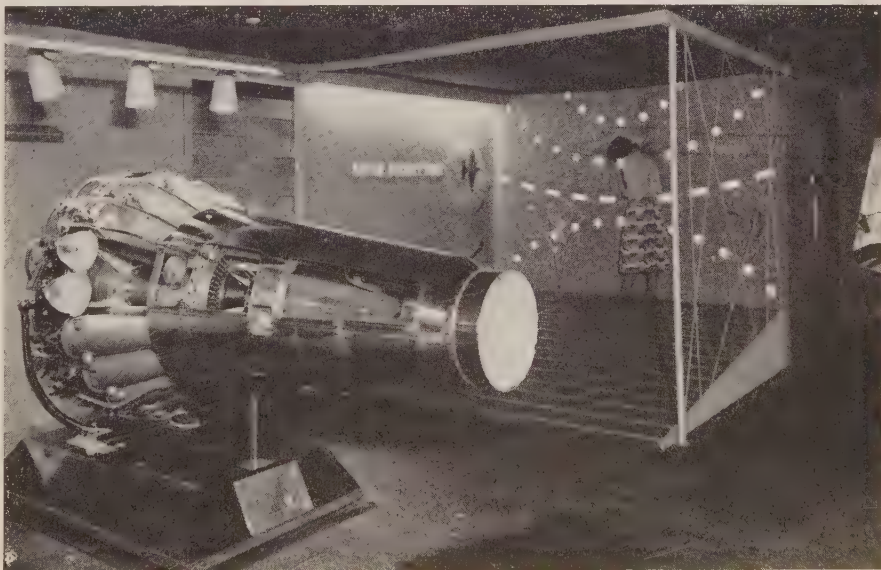
A German economic institute in Essen estimates that French steel ingot capacity will rise from the present 11-million-ton potential to 13,250,000 tons by 1953.

Finishing facilities will be expanded even more spectacularly. Sheet capacity will be doubled and the tin plate capacity tripled. The French steel plant has long been top heavy with basic capacity, but now that fault will be remedied.

## U.K.-U.S. Steel Swap Possible

American steel ingots may be exchanged for British structural steel, Defense Production Administrator Manly Fleischmann says.

The tonnages to be swapped are still subject to negotiation. Britain has plenty of structural steel but not enough ingots. American ingot supplies are far more adequate than are those of structural steel.



**RAMBLING ROLLS:** This Rolls Royce "Goblin" gas turbine airplane engine is part of the Land Traveling Exhibition of the Festival of Britain. The traveling exhibition will visit Leeds, Manchester, Birmingham and Nottingham, England

## No Holiday for Salesmen

**They are selling, but they're also pacifying, expediting and acting as consultants**

THIS MAY COME as a surprise to at least one government official who wondered what use industry could make of salesmen during an allout production period. Salesmen are being put to good use these days.

In a spot survey made by STEEL among a variety of metalworking activities not one company revealed that it was cutting down on its sales force. Few were failing to replace men who left for military service or resigned.

"By and large," says L. M. Clegg of Thompson Products, Inc., "salesmen are doing the same things they have been doing, but they are having greater problems because of the necessity of working under a part-war, part-peace economy."

**Says an aircraft accessories executive:** "We have increased our sales force since Korea; we want three more sales engineers."

**An automotive accessories executive:** "Our men may not be doing missionary sales work, but they call on our customers regularly. They're always working on inquiries. But they also help us schedule production so the neediest customers get attention first."

**An electric controls manufacturer:** "Our salesmen are doing service work. That's something they've al-

ways had to do. But they are also gathering information so that orders can be processed more quickly."

Faced with the prospect of not being able to satisfy civilian-business customers, more than one sales manager believes the primary job of their salesmen is to pacify customers.

Other companies, closer to civilian end products, are still actively training salesmen. Trumbull Electric Department of General Electric Co. held a marketing seminar last month for 15 new salesmen trainees.

**Call of Duty**—Salesmen for many metalworking facilities are doing jobs — in addition to their regular sales chores—that are scarcely allied to the sales cause: 8000 steel salesmen are working with local scrap mobilization committees to help build up the nation's dwindling scrap pile. Other salesmen are helping customers or employers get government contracts. Warner & Swasey Co. is utilizing its salesmen as consultants for customers to whom it cannot make immediate or near-term deliveries. Salesmen are teaching customers to use their present equipment more efficiently.

**Beyond the Call**—Other "odd jobs" for salesmen: Studying government regulations to determine distribution, prices and other controls, chasing down materials, advising customers on metallurgical and other technical problems. Steel warehouse salesmen in particular are helping customers get the best use of straight chromium steels.

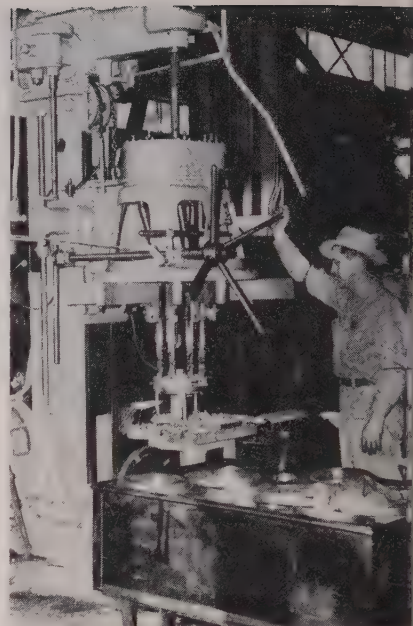
Says one executive: "A great many salesmen are doing things today that are above and beyond the call of duty."

## Wanted: Uranium Prospectors

Interested in prospecting for uranium? Atomic Energy Commission believes that the job can be done by private industry and private individuals.

The government-guaranteed ore price is high and discovery rights are about the same as apply to other mineral deposits. If you're interested, AEC recommends you write for its guide and handbook, *Prospecting for Uranium*. It contains descriptions of uranium minerals, tells where to look and how to test for uranium, where to buy and how to use a geiger counter and gives a summary of mining laws and a list of laboratories where samples are assayed free.

If you're going out on your own as a prospector, AEC recommends: First familiarize yourself with known occurrences of uranium, both through visits to areas of uranium mineraliza-



**WAY OUT WEST:** Formed in 1941, Lyco Machine Works, Oakland, Calif., now has several million dollars in contracts on hand and in process. The multiple drill, one of 134 pieces of major equipment being installed, will make Lyco one of the big industrial machine plants on the West Coast. Employment, now 70, will be five times that number when all the machinery is in place by January 1.



**SALES SEMINAR AT TRUMBULL**  
... training still goes on

tion and through published literature; include a geiger counter in your equipment; examine mine mineral collections, specimen cases of nearby museums, mine tailing piles and ore and mine working for radioactivity as one way to practice using the geiger counter. When you have laid the preliminary groundwork, AEC recommends that you call upon geologists of the commission and the U. S. Geological Survey for advice and assistance.

## Big Market for Fission Products

A big potential demand for fission products exists in industry, but many technical and economic problems must be solved before new uses for those by-products of the atomic energy program can develop.

That was the conclusion of Stanford Research Institute from a survey of industrial uses of radioactive fission products. Millions of curies of radioactivity are contained in the process wastes left over from the production of plutonium in the AEC's nuclear reactors. Of no usefulness for industrial or explosive power or as a heat source, those fission products are known to be a potential source of large quantities of low-cost radiation. Refinements and concentration of the

products, now stored at Atomic Energy Commission installations, will undoubtedly be necessary to make them suitable for industry, the SRI study indicates.

Present commercially feasible industrial uses include the activation of phosphors for self-luminescent signs and markers, static eliminators for many industrial processes, the reduction of starting voltage requirements in fluorescent light tubes and in process control instruments. Possible future uses for fission products include industrial radiography and portable power sources.

## Synthetic Gas Costs Weighed

Production of synthetic fuels from coal by the hydrogenation process is uneconomical, according to a study by the National Petroleum Council's Synthetic Liquid Fuels Production Costs Committee.

The committee reports that while the cost of synthetic liquid fuels from oil shale was "significantly higher" than the cost of gasoline produced from crude petroleum, that method warrants continued attention" of the petroleum industry.

On the basis of operating plants with a total capacity of 216,000 barrels per day, the cost—not including the cost of distributing, marketing or sales tax—of producing a gallon of synthetic gasoline from coal hydrogenation would be 43.5 cents. On the same basis, a gallon of gasoline made from oil shale would cost 14.7 cents delivered to a major consuming area. The present wholesale price at the refinery of gasoline produced from crude oil varies from 12 to 13 cents a gallon, excluding tax.

## Solar Licenses Coating Process

Solar Aircraft Co., San Diego, Calif., and Ferro Corp., Cleveland, have joined forces to help save on high-alloy steels.

The Cleveland firm, producer of raw materials and furnaces for the porcelain enameling industry, has been given exclusive license to manufacture, market and service high-temperature ceramic coatings developed by Solar that enable low-carbon steels to last as long and perform just as efficiently as the high-alloy metals.

Originally developed to protect jet engine parts, the coatings are also expected to be useful when applied to equipment for petroleum fractionating processes, to bearing surface on motors working under high-temperature conditions, in industrial furnaces and in home heating equipment.

## The Gap in Arc Welding

**The question for its equipment makers is: Where to get the steel they need**

IN DEFENSE PRODUCTION which comes first, the chicken or the egg?

As electric arc welding equipment makers put it, which is more important in making war equipment, a prime means of fabricating, such as arc welding, or increased materials to use in the fabrication? The arc welding equipment makers have an answer, but so far, they haven't found the government ready to listen to it.

They say it's first necessary to provide a means to fabricate the material you have before trying to get more. Yet, arc welding equipment makers are going wanting for more steel.

**Could Do Better**—Currently, the demand of fabricators for arc welding equipment far outstrips supply—deliveries being extended from 90 days to nine months.

But, the arc welding equipment manufacturers say they can increase their production by 30 to 50 per cent. Welding rod makers, for example, are turning out about 40 million pounds of rod per month; the high water mark during World War II was 100 million pounds per month.

Even though the arc welding machine makers could produce more, business is better this year than last.

Sales in units for 1951 are running about 10 per cent higher than 1950, and dollar sales are up about 15 per cent. The 1950 arc welding sales totaled \$87 million—\$27 million for machines, \$49 million for electrodes, and \$11 million for accessories.

Of each welding dollar spent in the U. S., arc welding accounts for 22 cents, gas welding, 72 cents, and resistance welding, 6 cents. This 22 cents of arc welding equipment buys 6.8 cents worth of machines, 12.5 cents worth of electrodes, and 2.7 cents worth of accessories. Defense and defense supporting work takes 75 per cent of the output.

**Within the Industry**—While there are 65 companies in the arc welding machine field, six or eight produce all of the motor generator sets and most of the transformer sets. Adapted for mass-production methods, transformer type welders now require advertising and merchandising to insure steady sales. One typical small company which formerly made arc welding outfits left the field in preference for resistance welding equipment because its smaller staff was better equipped to sell the more specialized tailor-made resistance welding applications. A 300 ampere motor generator type arc welding machine costs \$500 and a 500 ampere transformer type set costs \$550.

Most companies are running on one shift, but believe that they could easily find manpower for two or three shifts if they had the materials with which to work.



**STRETCHING 30 INCHES OVER 791 MILES:** Completion of this 30 inch pipe line will increase by 400 million cubic feet of gas per day the carrying capacity of the Texas Eastern Transmission Corp. system. A side-boom tractor pulls a cleaning and priming machine up a steep Tennessee Hill during construction of the line between Kosciusko, Mississippi, and Connelville, Pa.—a distance of 791 miles

**From Bumper to Tailgate . . .**



*Reduces Deadweight  
and Increases Durability*

The widespread use of N-A-X HIGH-TENSILE steel in transportation equipment emphasizes two vital characteristics of this high-strength low-alloy steel.

1. *Strength with less deadweight.* N-A-X HIGH-TENSILE steel reduces deadweight . . . of great importance in transportation equipment and military vehicles.
2. *Exceptional durability.* N-A-X HIGH-TENSILE steel, with its high strength and toughness, has proved greater resistance to fatigue and impact at normal and sub-zero temperatures. Its inherent structure and composition greatly reduce the effects of abrasion and corrosion.

The response of N-A-X HIGH-TENSILE steel to severe cold-forming operations and its excellent weldability by electric arc or resistance, atomic hydrogen or heliarc, and all other processes, are added important characteristics of N-A-X HIGH-TENSILE steel.



### **The "Eager Beaver"**

The use of low-alloy, high-strength steels in military equipment assures longer life with less deadweight.

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**CORPORATION**

# Mirrors of Motordom

**A Detroit defense contracting clinic gets a big attendance and many exhibits, but the consensus among exhibitors and visitors is that the affair didn't help much**

**DETROIT**  
BY A SUPERFICIAL criterion the prime contractors' exhibit for subcontractors here recently was a hang-up success.

Registration was 6156 and many of those came several times during the four-day show. That topped the number who have visited small business clinics in several other cities by a substantial margin. Sixty companies and government procurement and information agencies had set up booths and their representatives did a lively business talking to manufacturers about subcontracting opportunities in defense production. A casual observer would get the impression that clinics like these will solve most of the procurement problems of defense contractors.

**Grass Roots Opinion**—But here are quotations from exhibitors: "We need more production than the people who came here can give us." "These affairs don't help us find out anything, we know everybody who could make this item." "It wouldn't look right if we didn't have a booth, but we're not doing any good here." "Too many of these fellows don't know what they can make." "Some of them want us to buy the machinery for them." "I try to be polite, but he says: 'I make Venetian blinds, what can you make for you?'" "I find out what machines he has and have to figure out myself what he can do." And some of the visitors said: "Only the hard-to-make parts are left." "They took my name and said they'd put me on file." "I'm disappointed with it but I found out who to contact in some purchasing departments." "I saw a couple parts that I was turned down on because my bid was too high." "There isn't anybody here that I haven't already called on."

**Not All Gripes**—Not all the people at the clinic were unhappy. It depended on what they were ex-

pecting. A few of the exhibitors who have put on displays in other cities said they have stopped putting up boards with parts on them. They now use the clinics as a first contact point, a place where they can get fundamental information on an unknown manufacturer and can tell him who to contact in their organization. The automakers, especially, used this tack.

At Ford, Packard and Hudson booths questionnaire forms were available, asking generally for the firm name, peacetime products, facilities and type of defense work the company is qualified to handle. Visitors to Chrysler's booth registered, were given a briefing by purchasing agents on how to do business with the corporation and handed a booklet explaining its subcontracting policies. General Motors also used the briefing technique and passed out its "Selling to GM" booklet which contains a

directory of its manufacturing divisions and their peace and war products.

**Useful Approach**—Many companies still find exhibit of actual parts or blueprints useful. Willys-Overland, the Detroit Arsenal, three GM divisions, Wright Aeronautical, Packard and Hudson used that approach.

The clinics are no substitute, many exhibitors felt, for alert selling in the conventional way by manufacturers who want defense business. One Air Force procurement officer, however, pointed out that the Cleveland subcontracting clinic had apparently helped find makers of certain bottleneck parts because tight spots in that area were reduced noticeably about two months later.

## Little Change in Chrysler Units

Last January, Chrysler Corp. made the year's biggest automotive splash by its announcement of a new engine, power steering, redesigned bodies, improved shock absorbers, etc. Its press preview



**BUT TRY TO GET ONE:** Seated at the wheel of Buick Motor Division's dream convertible, the XP-300, is C. E. Wilson, General Motors Corp. president. Buick will not put the dream car into production because of the materials situation. Aluminum, bronze and copper were used generously to provide the car with advanced features

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of those features was a festive affair. Last Thursday it duplicated the party to show 1952 models, but this time things were different.

The new cars are almost indistinguishable from present design. The preview was notable not for them but for the corporation's defense work. And the olive drab and shiny aluminum of its military products symbolized the change in character of motordom — 1952 model.

Missing were some of the company's highly restricted military projects. But security regulations permitted display of three types of military trucks now coming off Dodge Division assembly lines; a 65-foot assembly of major hull sections of the Grumman Albatross, now being built at the Plymouth Evansville, Ind., plant; a tank exhibit depicting the product of the Newark, Del., plant now under construction; the J-48 engine to be built in the Navy-owned, Dodge-operated plant being built north of Detroit; the tank engine to be produced by Chrysler Division near New Orleans; picture of the giant Douglas Globemaster with the major tail and wing assemblies, to be built by Plymouth Division in a nearly completed addition to its Los Angeles plant; and a Hamilton Standard 16½-foot aircraft propeller, the newest defense contract received by the corporation. The Dodge plant at San Leandro, Calif., is being expanded by 750,000 square feet for its production. Additionally, military and civilian products of Airtemp, Amplex, Cycleweld, Chrysler Motors Parts, and Marine & Industrial Engine Divisions and Pekin Wood Products Co. were on display.

Effect of military preparation on materials, tooling and engineering personnel available for civilian production was obvious in the company's new cars. Two models of Dodge and one of DeSoto are among the missing this year—the Dodge Wayfarer Sportabout and Coronet eight-passenger sedan, and the DeSoto nine-passenger Suburban. About the only exterior change evident in the DeSoto is that block letters replace a joined script to spell out the name on the hood. Stop and back-up lights are combined in a new assembly. In-

Auto, Truck Output		
U. S. and Canada		
	1951	1950
January	645,688	609,879
February	658,918	505,593
March	802,737	610,680
April	680,281	585,705
May	695,898	732,161
June	653,682	897,853
Six Mos.	4,137,204	3,941,878
July	522,858	746,801
August	571,442	842,335
September	505,758	760,847
October	535,000*	796,010
November		833,784
December		671,622
Week Ended	1951	1950
Oct. 13	120,543	174,234
Oct. 20	120,810	188,323
Oct. 27	121,215	188,230
Nov. 3	119,247	177,122
Nov. 10	121,000*	161,113

Association, Ward's Automotive Sources: Automotive Manufacturers Reports. \*Preliminary.

teriors of the DeSoto have been dressed up, nylon being used for upholstery.

Exteriorwise, the 1952 Dodge grille has undergone a contraction of bright work; missing is the stainless steel stone shield on the rear fenders, tail light has been redesigned, as have the wheel covers and hub caps. Interior changes include new upholstery design, a combination of rayon and cotton being used in Coronet models for greater durability and comfort.

Neither car is being introduced with a V-8 engine although it is believed likely that small versions of the Chrysler Firepower engine will be incorporated in mid-1952 models.

Chrysler's financial report made the same kind of unhappy reading that General Motors' did (STEEL, Nov. 5, p.80). Strike-bound for more than a quarter in 1950, it is not surprising that this year's three-quarter sales are substantially higher, amounting to \$1985 million to Oct. 1 this year, against \$1490 million in the comparable 1950 period, and that it has sold 1,117,246 vehicles in three quarters of this year against 898,170 in the like 1950 period. The shock comes in the net incomes of the two nine-month periods. This year's earnings are less than half of 1950's —\$50.1 million against \$105.2 million. Earnings as a percentage of sales were 2.52 as compared with

7.06 during the first nine months of 1950.

## Hectic Meeting with NPA

As everyone knew it would the meeting of automakers with NPA to have second quarter 1952 passenger car quotas assigned was an angry one.

The larger companies, particularly, wanted no change in the percentage-of-industry figures as they presently stand, although some of the small companies had publicly stated that they had NPA assistance of an increase in their assigned percentage when they wanted it. Outcome was that three companies—all makers of a less than conventional size car—got an additional 1.28 per cent of the industry's second quarter quota. Kaiser-Frazer was most favored, having its "take" upped from 1.55 to 2.83. Nash will get 3.45 per cent instead of 3.3 as presently, and Willys-Overland, now authorized to make 1 per cent of industry output, can go to 1.21. Every other maker took a cut, Ford, of the big three, getting knocked down furthest percentage-wise.

## Labor Troubles Still Threaten

With the Borg-Warner strike in "recess" while the dispute is before the wage stabilization board and the Electric Auto-Lite walk-out, the potentially most dangerous labor disturbance, automotive-wise, is that of 406 Briggs Mfg. Co. body designers and engineers. All production will halt at Briggs Outer Drive and Vernor plants in Detroit if only those 406 go out. At this writing picketing had not started.

Their UAW contract runs until August, 1955, and incorporates such provisions as the annual improvements factor, escalator clause, etc. Their present demands, generally, are concerned with the mass spread. Within two months from the time of hiring, a new employee wants to be making only \$17.40 a month less than the old employee in his particular classification. Furthermore they want cancellation of the overlapping of salary rates between the various classifications. Status quo was prevailing last week with no discussions slated.

# The Business Trend

**Order of the day seems to be prosperity without profit as industry produces more but earns less. High steel rate, electric power output boost activity index**

**PROFITLESS PROSPERITY** might well be the keynote of the pay-as-you-go defense buildup period.

That was the tenor of third-quarter financial reports from nearly every segment of business. Even metalworking companies—pack mules of the armament burden—for the most part had less to show on the balance ledger for their increased efforts. Serious profit declines were seen in most consumer industries; they were squeezed by the rising floor of corporate taxes against a lowered ceiling of production volume.

Retroactivity of the corporate tax is a misleading factor though. It made the profit skid look worse because third-quarter earnings had to absorb tax increases on second-quarter profits too. Most companies will find their fourth-quarter profit picture less grim than the third.

There's no see-saw in production, even though the industrial product-mix has been scrambled by rearmament. Output volume has held fair-

ly steady since late August, with only creeping gains in some weeks. Federal Reserve Board's production index for October will probably inch up only one or two points from September's 219 per cent of the 1935-1939 average. Going into November (week ended Nov. 3) industrial production, measured by STEEL's index at 217 per cent of the 1936-1939 base, was several points above the October average. The rise can be attributed to record steel and electric power output.

## Power Peak...

Mainstay of the index most of the year has been electric energy production. The last full week in October shattered all output records with a mark of 7234 million kilowatt-hours. It promises to break through that level frequently before the year ends. Newly installed capacity is coming into use now and industrial demands this winter will be tremendous. Sep-

tember power generation figures, the latest available, show the extent of the output rise. In that month 30,275,324,000 kilowatt-hours of energy were produced by electric utilities alone, an increase of 9.1 per cent in one year. Combined utility and industrial production rose 8.1 per cent above September, 1950. Generating capacity of these two in October totaled 88,405,991 kilowatts.

## Six Million Cars and Trucks...

Last week the 6 millionth U. S.-made vehicle of 1951 rolled off an assembly line of the auto industry. At this time last year about 6.9 million cars and trucks had been produced. Despite limitations, two records will probably be set in the industry this year: Truck completions and Canadian assemblies of both cars and trucks.

Two less working days in November will cause a dip in U. S. production to 363,000 cars and 109,000 trucks, says *Ward's Automotive Reports*. The October count was 409,000 cars and 109,000 trucks. Resolving of supplier strikes makes the industry breathe more easily, but

## BAROMETERS of BUSINESS

### INDUSTRY

	LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
Steel Ingot Output (per cent of capacity)†	104.0	103.0	101.0	98.5
Electric Power Distributed (million kilowatt hours)	7,220	7,234	7,156	6,551
Bituminous Coal Production (daily av.—1000 tons)	1,923	1,896	1,842	1,954
Petroleum Production (daily av.—1000 bbl)	6,335	6,340	6,338	5,896
Construction Volume (ENR—Unit \$1,000,000)	\$209.8	\$189.1	\$421.9	\$199.7
Automobile and Truck Output (Ward's—number units)	119,247	121,215	112,868	177,122

\*Dates on request. †Weekly capacities, net tons: 1951, 1,999,035; 1st half 1950, 1,906,268; 2nd half 1950, 1,928,721.

### TRADE

Freight Car Loadings (unit—1000 cars)	870†	864	859	862
Business Failures (Dun & Bradstreet, number)	143	155	133	181
Currency in Circulation (in millions of dollars)‡	\$28,410	\$28,301	\$28,320	\$27,219
Department Store Sales (changes from like wk. a yr. ago)‡	+4%	+10%	+3%	+5%

†Preliminary. ‡Federal Reserve Board.

### FINANCE

Bank Clearings (Dun & Bradstreet—millions)	\$16,408	\$17,004	\$17,501	\$16,292
Federal Gross Debt (billions)	\$258.3	\$258.3	\$257.2	\$256.8
Bond Volume, NYSE (millions)	\$12.1	\$16.2	\$15.9	\$17.6
Stocks Sales, NYSE (thousands of shares)	8,142	10,683	10,231	9,223
Loans and Investments (billions)†	\$72.6	\$71.5	\$71.4	\$69.2
United States Gov't. Obligations Held (millions)†	\$31,940	\$30,976	\$31,212	\$33,729

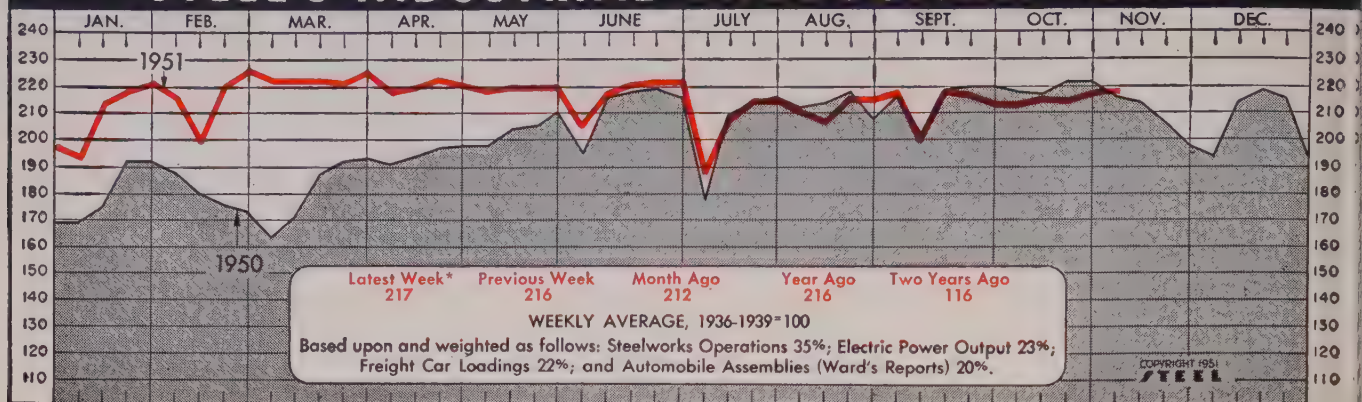
†Member banks, Federal Reserve System.

### PRICES

STEEL'S Weighted Finished Steel Price Index††	171.92	171.92	171.92	157.76
STEEL'S Nonferrous Metal Price Index‡	234.9	234.9	234.8	236.9
All Commodities†	177.0	177.1	177.1	169.7
Metals and Metal Products†	190.9	190.9	190.9	179.8

†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.

# STEEL'S INDUSTRIAL PRODUCTION INDEX



\*Week ended Nov. 3

temporary shutdowns the rest of the year are to be expected from minor strikes and model changeovers and to keep unit production within limitations. Combined output from U. S. and Canadian plants in the week ended Nov. 3 was 119,247 passenger cars and trucks, off almost 2000 units from the week before.

## Slight Letdown in Steel ...

Letting down slightly from its exertions of the week before, the nation's steel mills in the week ended Nov. 10 were scheduled to produce 2,019,000 tons of ingots and casting steels. In the prior week, output

was pegged at a record 2,089,000 net tons by the American Iron & Steel Institute. Scattered strikes have cut into output, but the national operating rate has been above capacity since the Labor Day week.

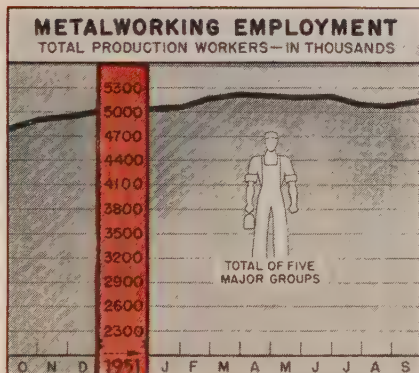
## Orders, Shipments Dip ...

Ordering of production equipment is falling off a bit, according to Office of Business Economics reports. New orders in September dropped 6 per cent to \$21.3 billion; durable-goods manufacturers reported larger decrease (\$1.1 billion) than nondurable goods makers (\$0.4 billion). Shipments were off about 4 per

cent from August after seasonal adjustment—6 per cent in durables and 3 per cent in nondurables. They were still about 3 per cent higher than the year-ago total. For the first time in two years backlogs of orders did not increase. Inventory book values continued to rise, due primarily to accumulation of defense goods.

## Plant Awards Booming ...

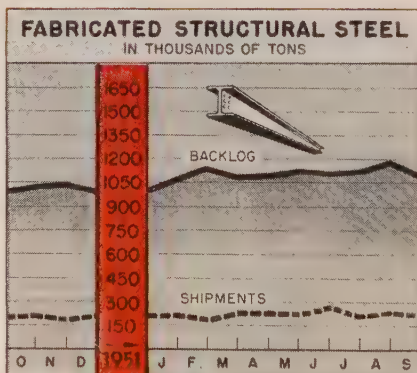
Industrial construction contracts awarded in the first ten months of this year reached \$3635 million, says *Engineering News Record*. That's a jump of 162 per cent over the dollar volume awarded in the same period



**Metalworking Employment**  
Production Workers—Five Major Groups

	Prim. Mtls.	Fab. Prod.	Mach.inery	Elec. Mch.	Trans. Equip.
1950					
Sept.	1,105	837	1,050	673	1,134
Oct.	1,117	850	1,104	710	1,157
Nov.	1,125	849	1,133	720	1,128
Dec.	1,142	852	1,163	724	1,160
1951					
Jan.	1,149	847	1,192	711	1,175
Feb.	1,153	853	1,219	716	1,228
Mar.	1,158	858	1,228	724	1,259
Apr.	1,150	858	1,234	717	1,244
May	1,161	850	1,246	709	1,231
June	1,171	843	1,253	703	1,235
July	1,155	814	1,232	690	1,204
Aug.	1,164	818	1,208	701	1,214
Sept.	1,161	809	1,224	715	1,237

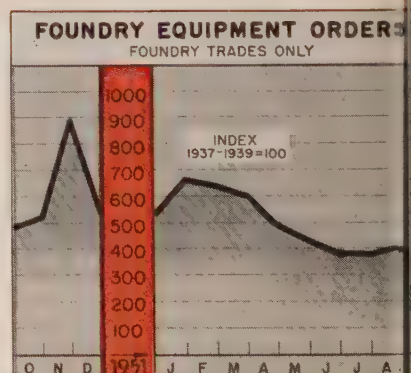
U. S. Bureau of Labor Statistics



**Fabricated Structural Steel**  
Thousands of Net Tons

	Shipments		Backlog	
	1951	1950	1951	1950
Jan.	214.0	154.7	1,067	756
Feb.	193.6	149.8	1,143	780
Mar.	237.1	185.2	1,088	762
Apr.	234.1	187.8	1,093	727
May	234.5	194.8	1,121	785
June	257.1	202.4	1,111	781
July	204.3	165.5	1,135	920
Aug.	239.8	218.4	1,134	1,009
Sept.	229.3	198.7	1,086	993
Oct.	...	211.8	...	1,018
Nov.	...	193.8	...	1,034
Dec.	...	212.9	...	1,007
Total	...	2,275.9	...	...

American Institute of Steel Construction



**Foundry Equipment**

	Index		Value in Thousands	
	1951	1950	1951	1950
Jan.	668.0	159.3	\$3,075	\$731
Feb.	638.6	113.1	2,940	519
Mar.	599.0	225.2	2,758	1,034
Apr.	490.1	160.6	2,256	737
May	431.7	294.9	1,987	1,353
June	393.2	622.7	1,810	2,858
July	390.3	401.8	1,797	1,844
Aug.	404.5	693.6	1,862	3,183
Sept.	346.5	483.8	1,595	2,220
Oct.	...	526.8	...	2,417
Nov.	...	885.5	...	4,077
Dec.	...	526.2	...	2,412

Foundry Equipment Mfrs. Assoc.

Charts—Copyright 1951, STEEL

last year. Other 10-month figures: Commercial building, at \$542 million, is off 36 per cent; private housing awards, totaling \$1676 million, are down 30 per cent.

## Coal Piles High for Winter . . .

Cold weather last week will make many people look twice at their coal piles. Luckily for them there is plenty on hand if they haven't stocked up yet. At the beginning of October, the U. S. Bureau of Mines says 76,245,000 net tons of bituminous were on hand, down only 747,000 tons from the eight-year stock peak established in July. Industrial users held almost 19 per cent more coal on hand than in October, 1950. Retail dealers had cut their supplies 23 per cent from that time last year. Coal on hand is enough to last 66 days at present rates of consumption.

## Expert's Estimates . . .

Gross national product will be \$334.3 billion in the fourth quarter, and \$348.6 billion in the fourth quarter of 1952. That's the average

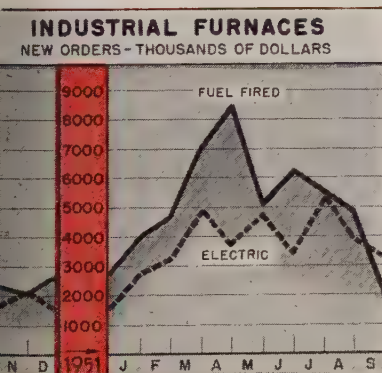
estimate of 128 economists polled by F. W. Dodge Corp. Third-quarter rate was \$328 billion, the government says. The economists believe that production will rise continuously from now until the end of next year. Construction will decline a bit, but still be of boom proportions. Opinions were asked as to when economic controls will end. Some median dates: Steel—second quarter 1953; copper—third quarter 1953; aluminum, prices, wages, salaries—fourth quarter 1953.

## Trends Fore and Aft . . .

Factory layoff rate continued high in September, 13 per 1000 workers. Hiring for the third consecutive month was at the lowest rate for the season in over a decade, except for 1949. The rate was 43 per 1000 in September. Quits were unchanged at 31 per 1000 workers . . . New business incorporations in September—5957—were at a six-year low . . . Consumers increased their installment debt by \$112 million in September . . . The textile industry expects further slumps.

### Issue Dates of other FACTS and FIGURES Published by STEEL:

Construction . . . . .	Oct. 29	Ironers . . . . .	Nov. 5	Refrigerators . . . . .	Oct. 1
Durable Goods . . . . .	Oct. 8	Machine Tools . . . . .	Nov. 5	Steel Castings . . . . .	Oct. 22
Employ., Steel . . . . .	Oct. 29	Malleable Castings . . . . .	Oct. 22	Steel Forgings . . . . .	Aug. 20
Freight Cars . . . . .	Oct. 22	Prices . . . . .	Oct. 1	Steel Shipments . . . . .	Nov. 5
Furnaces, W. Air . . . . .	Sept. 17	Pumps, New Orders . . . . .	July 9	Vacuum Cleaners . . . . .	Oct. 29
Gear Sales . . . . .	Nov. 5	Purchasing Power . . . . .	Oct. 8	Wages, Metalwkg. . . . .	Oct. 22
Gray Iron Castings . . . . .	Oct. 22	Ranges, Elec. . . . .	Oct. 29	Washers . . . . .	Nov. 5
Indus. Production . . . . .	Oct. 1	Ranges, Gas . . . . .	Oct. 29	Water Heaters . . . . .	Oct. 1

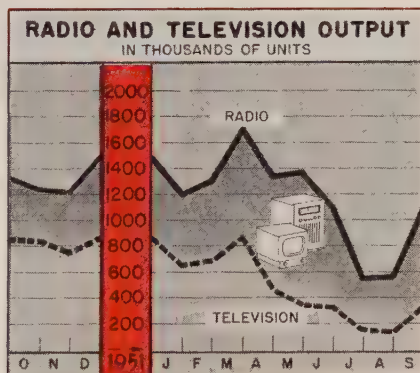


### Industrial Furnaces

New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1951	1950	1951	1950
Jan. ....	4,033	1,914	2,764	473
Feb. ....	4,670	616	3,212	697
Mar. ....	7,019	1,300	4,846	753
Apr. ....	8,497	837	3,657	415
May ....	5,044	1,392	4,766	982
June ....	6,259	1,166	3,370	1,328
July ....	5,303	2,247	5,537	1,445
Aug. ....	4,850	3,927	3,891	1,039
Sept. ....	1,821	1,817	3,250	1,485
Oct. ....	.....	2,306	.....	1,603
Nov. ....	.....	2,068	.....	2,157
Dec. ....	.....	2,749	.....	1,505

\*Except for hot rolling steel.  
Industrial Furnace Mfrs. Assn.



### Radio and Television Output

Thousands of Units

	Radio		Television	
	1951	1950	1951	1950
Jan. ....	1,203	935	646	439
Feb. ....	1,313	1,059	679	480
Mar. ....	1,720	1,349	875	687
Apr. ....	1,337	1,254	469	543
May ....	1,373	1,245	339	486
June ....	1,083	1,491	327	502
July ....	548	666	152	327
Aug. ....	563	1,304	147	721
Sept. ....	1,100	1,335	337	844
Oct. ....	.....	1,230	.....	838
Nov. ....	.....	1,216	.....	739
Dec. ....	.....	1,506	.....	858
Total . . . . .	14,590	.....	7,464	.....

Radio-Television Mfrs. Assoc.

# L&I quality ground REAMERS

FOR EVERY PURPOSE

LONGER LIFE

FINER FINISH

EXTREME ACCURACY

ECONOMY

PERFORMANCE

RELIABILITY

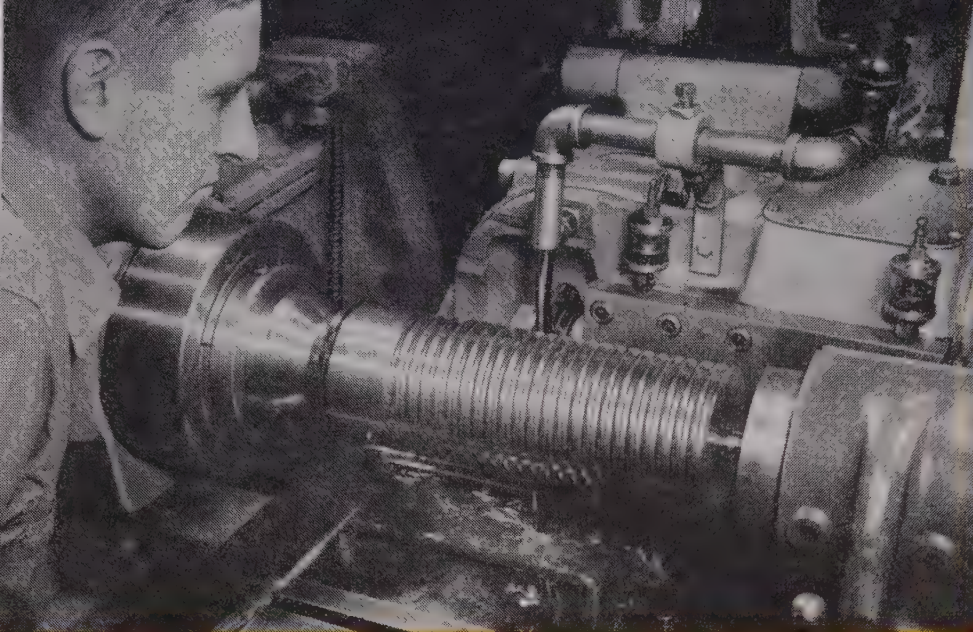
Complete range of sizes and types. In addition, Fractional sizes 1/16" thru 1/2" by 64ths, Wire Gage sizes #1 thru #60 and Letter sizes A thru Z are STANDARD with L&I. See your L&I Distributor.



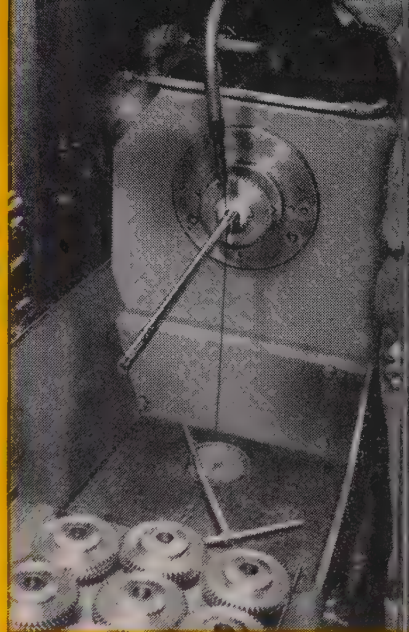
The Reamer Specialists

LAVALLEE & IDE, INC.

CHICOPEE, MASS.



**THREAD MILLING A SCREW.** Metal: SAE 2345 steel heat-treated to 28 Rockwell • Machine: Lees Bradner thread miller • Part: 5/4" adjusting screw for press brake • Operations: rough and finish thread milling • Tool: high-speed steel • Feed: 0.260 depth on roughing • Cutting Oil: Sunicut 105



**BROACHING A GEAR KEY-WAY.** Metal: SAE 2345 steel forging 220 Brinnell • Machine: 3L8 La Pointe hydraulic broach • Part: gears for shaper, produced two at a time • Tool: 3' high-speed steel broach • Cutting Oil: Sunicut

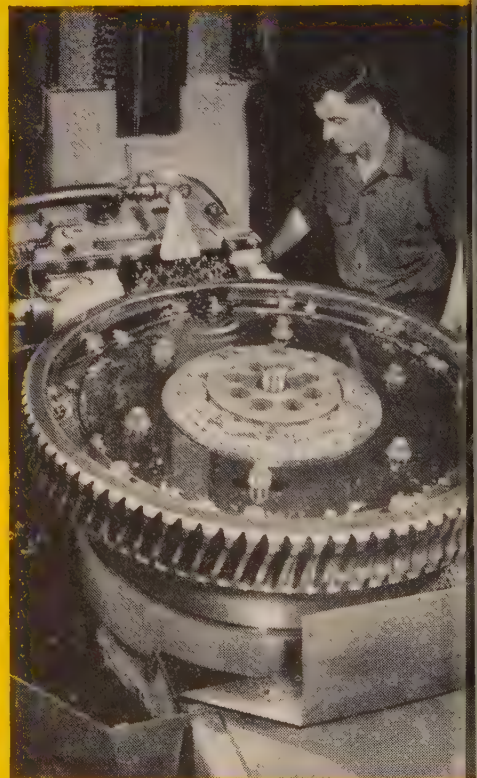
# SUNICUT 105 REPLACES THREE OILS AND SOLVES FIVE MAJOR PROBLEMS

Buying three cutting oils and then blending them to make additional grades had proved highly unsatisfactory to a machine tool builder. The smoke was noxious, employees complained of skin irritations, the color of the oils made it difficult to see the work, tool life was short and finishes not up to standard. To help solve these problems, the company called in a Sun representative and on his advice tested Sunicut 105 on the three tough jobs pictured here.

So good were the results that the company adopted Sunicut 105 for every machine in the plant and has used it exclusively for the past two years. The operators like its transparency. There are no complaints about smoke or skin irritations. Finishes have improved and tool life increased as much as 50 percent.

For complete information on Sun's cutting oils, write to Department S-9 and we will send you a copy of our informative, illustrated booklet "Cutting and Grinding Facts."

**CUTTING A LARGE GEAR.** Metal: bronze 180 Brinnell • Machine: Gould & Eberhardt gear hobbing machine • Part: main drive worm gear wheel for large shear • 42 5/8" O. D.; 5" thick; 87 teeth • Tool: high-speed steel hob • Feed: 0.006 • Speed: 42 rpm • Cutting Oil: Sunicut 105



## SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



# Men of Industry



E. H. STAU

... sales mgr. of Townsend's Pacific Div.

**E. H. Stau** was appointed sales manager of a newly created Pacific Division of **Townsend Co.**, New Brighton, Pa. He formerly was general manager of **Cherry Rivet Co.**, a division of Townsend. In addition to directing sales activities for the parent company on all Townsend cold-headed metal products on the Pacific Coast, Mr. Stau will direct aircraft and government contacts for the **Cherry Rivet** line of specialized fasteners on a national basis.

**L. J. Smith** was appointed to the newly created position of eastern regional sales manager, **Chiksan Co.**, Brea, Calif. His headquarters will be in Newark, N. J., where he served as a field engineer for the last four years.

**Lorenzo S. Washburn** was appointed quality manager of **Norton Co.**'s abrasive division to succeed **Charles J. Hudson**, retired after 34 years' association with the company, but who continues as quality consultant to the division. **Clarence W. Halleen** replaces **Irving B. Loud** as superintendent of plants 1, 2 and 3. Mr. Loud retires after 35 years with the company. Mr. Halleen also will supervise the tunnel kilns and vitrified molding in plant 6. **John Matson** becomes assistant superintendent of these departments.

**James L. Brown** was named sales manager for receiving tubes and cathode ray tubes for **Westinghouse Electric Corp.**, with headquarters at Elmira, N. Y. **Carl F. Miller** was named manager, receiving tube development and design engineering, with headquarters at Bath, N. Y.



THOMAS F. GRIFFIN

... Worthington's Holyoke purchasing agent

**Worthington Pump & Machinery Corp.** appointed **Thomas F. Griffin** purchasing agent at its Holyoke, Mass., Works to succeed **Milton Roberts**, resigned to engage in another business. Since May, 1950, Mr. Griffin has been general buyer in the general purchasing department, **Harrison, N. J.**, and is succeeded in that position by **LeRoy D. White**, former co-ordinator of the contract engineering division.

**Harry Oldham** joined the engineering staff of **Sutter Products Co.**, Dearborn, Mich. His 48 years of experience in ferrous and nonferrous foundries will be applied to development and design of new foundry equipment, particularly in the shell molding process, and on customer service. Mr. Oldham in 1947 became general foundry superintendent, **Mack Trucks Inc.**, and in 1950 joined **Hunt-Spiller Mfg. Corp.** as foundry superintendent.

**Jones Metal Products Co.**, West Lafayette, O., appointed **Herbert Boyer** vice president in charge of sales, **L. E. Reed**, administrative assistant to Mr. Boyer and **R. P. Harner** to fill the newly created position of director of sales, **ABolite Lighting Division**. Mr. Boyer was secretary-treasurer.

**Charles D. McCall** was appointed general sales manager, **New Departure Division**, **General Motors Corp.**, Bristol, Conn., to succeed **Frank J. Miller**, resigned. **Lorne F. Lavery** replaces Mr. McCall as Detroit regional sales manager of the division, and **Howard A. Offers** moves from Chicago where he was manager, Midwest regional office, to Bristol as assistant general sales manager.



RAYMOND B. CREAN

... V. P.-Southwark Div., B-L-H

At the Eddystone, Pa., plant of **Baldwin-Lima-Hamilton Corp.**, **Raymond B. Crean**, vice president, now has responsibility for the **Southwark Division**, including hydraulic turbines, presses, power tools, testing machines and other products built in the **Southwark shops**. **John S. Newton**, vice president, has responsibility for the locomotive division; and **James R. Weaver**, vice president, for the newly created defense and special products division.

**Baker-Raulang Co.**, Cleveland, elected **Edwin W. Sankey** as vice president and assistant to the president, and **John A. Matousek** as vice president in charge of manufacturing. Mr. Sankey has been purchasing agent since 1933 and continues supervision of that department. He will also coordinate engineering and manufacturing, and will work with the sales department in planning and executing a development program. Mr. Matousek was appointed manufacturing manager in 1949.

**Robert A. Bower**, formerly assistant general purchasing agent, was appointed assistant to the executive vice president of **Doehler-Jarvis Corp.**, New York. He is succeeded by **Mark F. Beckington**, formerly senior buyer at **Kaiser-Frazer Corp.**, who joined **Doehler-Jarvis** in 1949.

**Andrew E. St. John** was elected vice president and treasurer of **Alloys & Products Inc.**, New York. In addition he will be in charge of company manufacturing operations.

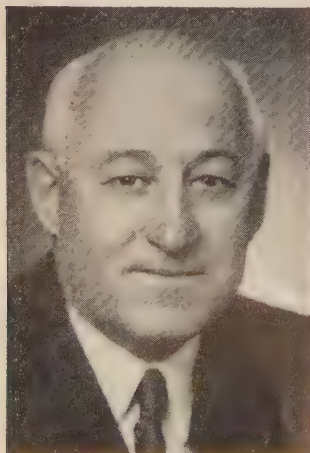
**Lincoln Engineering Co.**, St. Louis manufacturer of equipment for appli-

cation of lubricants, elected **L. L. Meikle** as president of Lincoln Engineering Co. of California. He succeeds **C. Homer Redd**, who continues in an advisory capacity. Mr. Meikle was general manager.

**Taylor-Wharton Iron & Steel Co.**, Cincinnati, appointed **Ralph G. Detmer** vice president - trackwork division, to co-ordinate all phases of the trackwork operation. He is located at the executive offices at Cincinnati. The trackwork plants are at Easton, Pa., Birmingham, and Cincinnati. He was vice president and general manager of American Frog & Switch Co., subsidiary, until consolidation in 1949 of it and Taylor-Wharton with Weir Kilby Corp. At that time he became assistant to the president-sales and engineering.

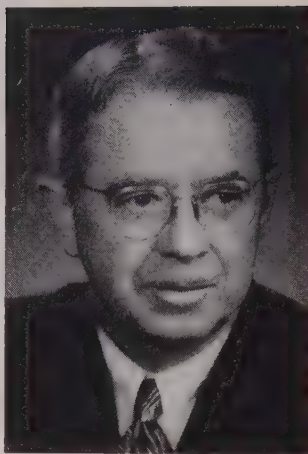
**Theodore R. Treadwell** was appointed sales manager of **Clover Mfg. Co.**, Norwalk, Conn., in charge of its entire line of products, including both coated abrasives and grinding and lapping compounds.

**Revere Copper & Brass Inc.**, New York, elected **James J. Russell** chairman of the board and chief executive officer, and **James M. Kennedy** as president. Mr. Russell, formerly president, succeeds **C. Donald Dallas**, who continues as a director. Mr. Kennedy, formerly vice president in charge of the Rome, N. Y., Mfg. Co. division, was also in charge of the Riverside, Calif., and Clinton, Ill., manufacturing divisions. **Chester M. McCreery** assumes charge of these divisions, and will be assisted at the Rome division by **Edwin D. Howell**, former works manager at Clinton. Mr. McCreery was sales manager for Revere Ware, fabricated at the Rome division. **Harold J. Schindler** succeeds Mr. Howell at Clinton.



**JAMES J. RUSSELL**

... Revere chairman and chief exec. officer



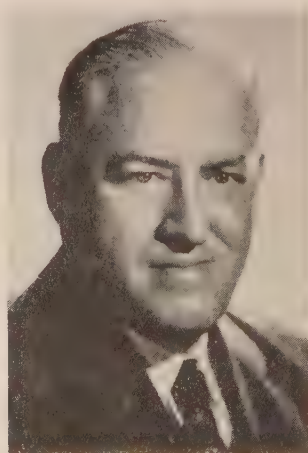
**K. B. ELLIOTT**

... exec. V. P. of Studebaker

**K. B. Elliott** and **P. O. Peterson** were elected executive vice presidents of **Studebaker Corp.**, South Bend, Ind., and **E. C. Mendler** and **R. A. Hutchinson** were elected vice presidents. Mr. Elliott formerly was vice president in charge of sales, and Mr. Peterson, vice president of manufacturing. Mr. Mendler formerly was general manager, parts and accessories division, and Mr. Hutchinson was general manager of the export division. As in the past each will continue responsibility for his department, reporting directly to **Harold S. Vance**, chairman of the board and president.

**F. E. Gibson** was elected treasurer of **Graybar Electric Co.**, with headquarters in the general department in New York. He was district credit manager at Chicago.

**Horace T. Potts Co.** announces appointments in its Philadelphia organization: **Arthur L. Collins** is director of sales; **W. Hughes Dunlap**, special assistant to director of sales; **John W. Reckard**, sales manager; **John H.**



**JAMES M. KENNEDY**

... new president of Revere



**P. O. PETERSON**

... exec. V. P. at Studebaker

**Kern**, assistant to sales manager (office sales); **Joseph J. Folz**, assistant to sales manager (stainless steels); **Donald C. Taylor**, assistant to sales manager (tool steels); **Clee O. Worden**, assistant to sales manager (machinery steels); **Roy K. Clement**, assistant to sales manager (special products); and **Robert A. Neeley**, assistant purchasing agent.

**Vonnegut Moulder Corp.**, Indianapolis, appointed **Oliver S. DeHaven** to re-assume duties of chief engineer after an absence of four years. **Eric Lindenberg** joined the engineering division in charge of demonstrations and experiments related to Vonnegut grinding and polishing equipment.

**George R. Hanks** was elected president, **American-LaFrance-Foamite Corp.**, Elmira, N. Y. He succeeds **Edward E. O'Neill**, resigning because of ill health. **Wilfred M. Price** was elected executive vice president.

**John H. Harrison** was appointed a sales supervisor in the Southwest district of **York Corp.**, with headquarters in Houston. He was associated in a similar capacity with **Wells Mfg. Corp.** He succeeds **L. B. White**.

**Jesse L. Powers** was appointed assistant general manufacturing manager, **Buick Motor Division**, Flint, Mich., General Motors Corp. He succeeds the late **Walter N. Larke**. **Donald F. Taylor** becomes general superintendent in charge of ordnance production at Buick.

**Victor A. Noel** was elected vice president in charge of sales, **Ritter Co.**, Rochester, N. Y. He had been general sales manager since 1942.

**Al Dunn** was named manager of manufacturing at the assembly plant in

*The*



**WEAN**

**ENGINEERING**

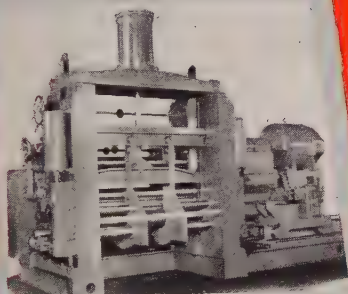
*Company, Inc.*

**WARREN, OHIO**

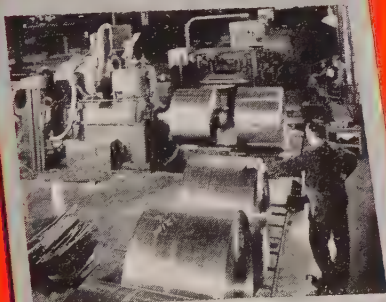
Continuous Strip Pickle Line



Processing Uncoiler



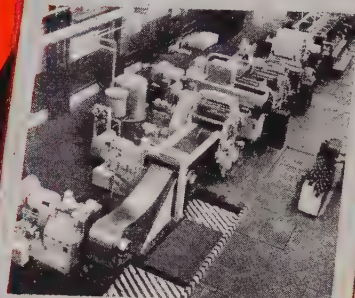
Continuous Electrolytic Cleaning Line



Continuous Hot-Dip Galvanizing Line



Continuous Coating Line



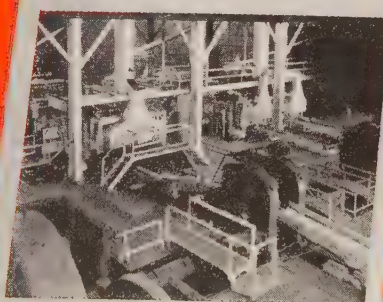
Tin Plate Shearing Line



Hot-Dip Tinning Units



Mechanized Sheet Mill



*Associated Companies*

**WEAN EQUIPMENT CORPORATION**  
Cleveland, Ohio

**WEAN MANUFACTURING CO.**  
Warren, Ohio

**THE MCKAY MACHINE COMPANY**  
Youngstown, Ohio

**FLINN & DREFFEIN**  
**ENGINEERING COMPANY**  
Chicago, Illinois

**THE HALDEN MACHINE COMPANY**  
Thomaston, Connecticut

**THE DREVER COMPANY**  
Philadelphia, Pennsylvania

**THE WEAN ENGINEERING CO.**  
**OF CANADA, LTD.**  
Hamilton, Ontario

**REPRESENTATIVES**  
England—  
**JOHN MILES & PARTNER**  
(London, Ltd.)  
London, England

France—  
**P. DAMIRON & CO**  
Paris, France

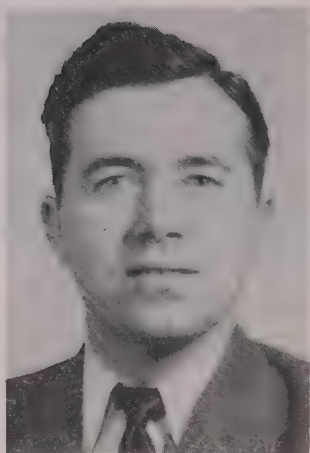
**NORVIL COMPANY**  
Milan, Italy

**SPECIALISTS IN SHEET, TIN  
AND STRIP MILL EQUIPMENT**



L. I. BARKER

... Republic's Cleveland sales mgr.



FLOYD E. MENGEL

... Morton Machine Works gen. mgr.



WILLIAM J. WELCH

... manages National Lead's metal dept.

Buffalo of Ford Motor Co. He succeeds E. M. Timmons, newly appointed body superintendent.

**L. I. Barker** was appointed Cleveland district sales manager for **Republic Steel Corp.** He replaces **Paul R. Johnston**, resigned. Since 1945 he has been assistant district sales manager at Cleveland for Republic and subsidiaries.

**C. S. Larson**, manager of the special machinery engineering department, **A. O. Smith Corp.**, Milwaukee, retired after 31 years with the company.

**Clarke A. Silcott** was appointed general manager, and **K. J. Flood**, manufacturing manager of the engine division of **Kaiser-Frazer Corp.**, Willow Run, Mich. Mr. Silcott succeeds **T. A. Bedford**, recently appointed K-F vice president in charge of manufacturing. **D. L. Mapes** was appointed procurement director of the engine division.

**Frank W. Chambers** was appointed director of engineering, **Kennecott Copper Corp.**, New York. Since 1949 he has been production manager of the engineering and construction division of **Koppers Co. Inc.**, and was associated with that company for many years. He assumes his new position about the middle of this month.

**Floyd E. Mengel** was appointed general manager in charge of sales and manufacturing, **Morton Machine Works**, Detroit. **Eric Butterworth** was appointed manufacturing superintendent.

**Walter Anderson** was named purchasing agent of **Royal Metal Mfg. Co.**, Chicago, and **Drex Drehmel** was appointed assistant purchasing agent.

**C. Stuart Haagen** was appointed director of industrial and public relations of **Ampco Metal Inc.**, Milwaukee. For the last 12 years he has been in the industrial relations division of **Allis-Chalmers Mfg. Co.**

**National Supply Co.**, Pittsburgh, promoted **Francis H. Elliott** to assistant general credit manager at its engine division and export division, and **Stanley L. Furman** as assistant general credit manager, eastern and northwest oilfield divisions.

**Carboloy Department**, Detroit, General Electric Co., transferred **Arthur E. Johnson** from its customer training school in Detroit to its Pacific district office, Huntington Park, Calif.

**William Bynum** was elected executive vice president of **Carrier Corp.**, Syracuse, N. Y. He was vice president-general sales manager.

**William J. Welch** was appointed manager of **National Lead Co.'s** metal department, New York. He joined the company in 1916, and was made assistant to the manager, metal department, in 1947. In October of that year he became manager of the metal sales department.

**Aetna-Standard Engineering Co.** Pittsburgh, announces the following changes: **R. D. Johnson**, formerly general manager, Ellwood City, Pa., and Warren, O., plants, was named assistant to the vice president, **H. G. Coffey**. He is succeeded at Ellwood City by **T. C. Ben. Lawrence**. **R. D. Jeffers** takes over as general superintendent of the Ellwood City plant with **W. E. Durstine** as assistant. **James H. Rauch** was appointed superintendent, roll department, and **R. R. Kelly**, office and traffic manager at Ellwood City.

**John G. Cherry** was elected president of **Cherry-Burrell Corp.**, Chicago. He succeeds the late **John W. Ladd**.

**W. H. Prewitt Jr.** succeeds **L. C. Barton**, retired, as manager of **Wagner Electric Corp.'s** Atlanta branch.

**Consolidated Vultee Aircraft Corp.**, San Diego, Calif., appointed **Quentin G. Turner** manager of industrial engineering, Convair Guided Missile Division, Pomona, Calif.

## OBITUARIES...

**Robert N. Blakeslee**, 58, vice president and director of engineering, **Ajax Electrothermic Corp.**, Trenton, N. J., died Oct. 17. He was associated with Ajax for 24 years.

**George A. Barclay**, a steel plant executive in the U. S. and Canada for 44 years, died Oct. 28 in Buffalo. He formerly was superintendent of mills

at Bethlehem Steel Co. and in later years held the same post with Steel Co. of Canada in Hamilton, Ont. He retired in 1948.

**Phil S. Harvey**, vice president, **C & D Batteries Inc.**, Conshohocken, Pa., died Oct. 27.

**M. R. Peck**, 67, vice president, **McKay Co.**, Pittsburgh, died of a heart attack Oct. 25.

**W. I. Abrams**, 52, president of **Atlas Foundry Co.**, Irvington, N. J., died Oct. 28.

**Earl W. Mikels**, 62, production manager, chain department, **Diamond Chain Co. Inc.**, Indianapolis, died Nov. 3.

**Alfred R. Bolger**, vice president of **F. L. Hughes & Co.**, Rochester, N. Y., died Oct. 26.

**JUST SO IT'S STEEL**—Production manager of a plant busily engaged in turning out scores of domestic furnaces and blower units watched the finished cabinets slide by on an overhead conveyor from the spray booth. To a routine question as to what type of flat-rolled steel was used in fabrication of the cabinets he threw up his hands and said, "Who knows? Hot rolled, cold rolled, single pickled and oiled, anything that will take the paint. Mill stuff, warehouse, 'conversion', 16-gage, 18-gage, just so it's steel." His answer is probably typical of many an operator tearing his hair these days trying to keep an assembly line moving.

**TO HIT THE ROADS**—When the current defense emergency eases, one of the first major projects to get under way will be roadbuilding in a big way. The recent blast from General Motors on the sorry state of the nation's roads and highways, along with the antiquated planning and woefully inadequate spending behind them was the tipoff if one was needed. Manufacturers of all types of roadbuilding machinery, supplies, materials, bridges, culverts, roadguards, reinforcing and the like can expect a tremendous boom. Timing is the only question.

**NO DEAD INVENTORY**—A Chicago warehouse is now equipped to reroll 2000 tons of strip steel per month to customers' specifications. Facilities consist of a two-high 700 hp, 3-stand 16-inch tandem cold reducing mill, bright annealing and pickling equipment for strip and for wire. The new rolling capacity will be used to supplement supplies from regular mill sources and to produce steel to standard as well as to intermediate tempers and tolerances. p. 90

**HOT LACQUERED AMMO**—Increasing quantities of materiel and ammunition for the Army, Navy and Air Force are being finished by hot lacquer spraying methods, approved under various MIL specifications. Covering both primers and finish coats, the specs recognize hot lacquering's advantages: Increased coverage per gallon, fewer coats, better flowout and less tendency to sag, better cold check resistance, higher contact temperature, less waste of solvent. One spec details a fast-drying, one-coat finish for phosphated or primed shells, bombs, grenades and other ammunition components. It is also designated as a 1 mil thick finish coat for army tanks. This particular formulation comes in eight standard colors—white, black, light blue, red, yellow, olive drab, green and blue-gray. p. 76

**SPECIFIC STANDARD TAPS**—"Specific" taps, specifically designed and produced for tapping specific materials are now standardized and carried as regular catalog items under a new program initiated by Detroit Tap & Tool Co. Steel and other tough

materials, cast iron, aluminum, magnesium and other light substances, zinc die casting metals, brass and plastics are the materials for which the specific taps are available. So in addition to general purpose standard taps, the company now offers six lines of "specific" taps.

**SIMPLIFIED SHELL LATHE**—A veteran machinery expert, active principally in the rebuilding field, has evolved a design for a single-purpose shell turning lathe, featuring tubular ways, standard accessories and a number of other ideas suggesting it might be built in quantity and in a hurry at a particularly attractive price. Prints have been shown to Army Ordnance engineers who reportedly are much interested.

**EARN TO LEARN AND LEAVE**—Manual welding of armor plate requires more than ordinary skill on the part of the welder if his work is to pass the rigorous eye of the x-ray. Hence a large Ordnance facility set up an elaborate welding school with dozens of booths where individual operators could be trained. Several weeks of instruction are required before the welder can be turned loose on production work. One unfortunate outgrowth of the project has been a high degree of turnover in trained welders, many leaving the plant to accept high-paying jobs in smaller plants in the area. That is one way of getting paid to learn a skilled trade.

**FAST-REVERSING MOTOR**—Small electric motors can be reversed in 3 to 4 milliseconds using a method developed at the National Bureau of Standards. Kinetic energy of the rotor, instead of being dissipated as heat in a brake during deceleration, is converted into potential energy in a spring and then used to accelerate the rotor rapidly in the opposite direction. Designed to meet the need for high-speed reversal of magnetic tapes in electronic digital computers, the technique might be applied to reversing rolling mills. p. 97

**SAVES COPPER AND CASH**—The Navy has come up with at least one idea for saving critical copper and Navy funds. The idea is to increase the length of planking used on naval vessels and thus reduce the number of fastenings between the timbers. By adopting glued scarf, or notched joints in specifications for planking wooden minesweepers, the Navy can save \$3320 per vessel in planking installation alone. Instead of using only solid planking members, shipbuilders are encouraged to use the new scarfed material. With more planking available for shipbuilding, fewer butt joints between planks are needed. Each joint has six silicon bronze fasteners. And silicon bronze is about 94 per cent copper, just about the scarcest of many scarce metals these days.

# BROADER USE OF HOT-SPRAYED

## Seen on Military Equipment

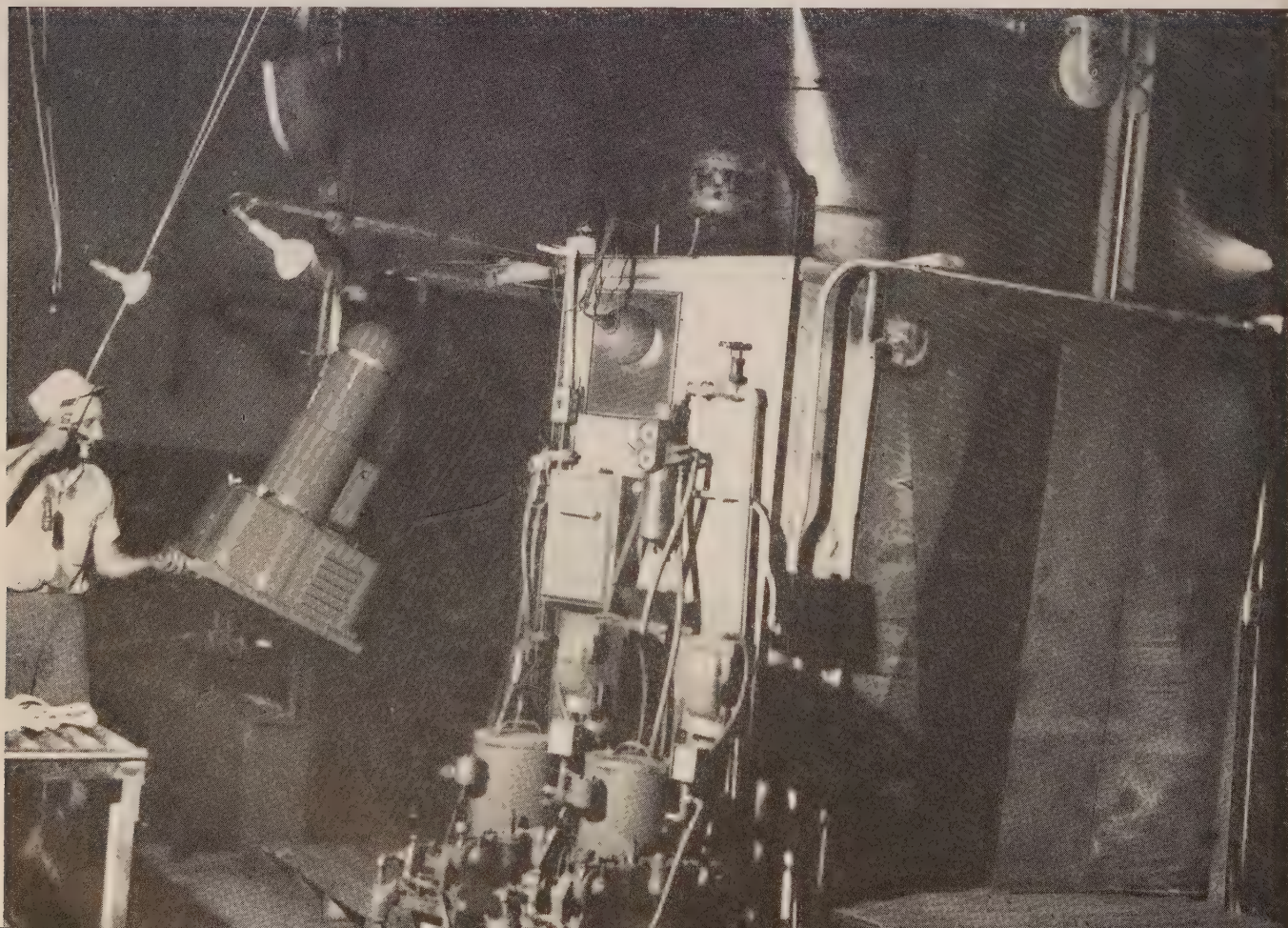
Higher proportion of solids at the gun means fewer coats, less labor, less solvent and better flowout of the finish. Heating units may be either in the gun or on a separate tank. Estimates indicate 4000 are now in use

MILITARY specifications for sprayed and dipped finishes on materiel and equipment have been going through a process of co-ordination, amendment and upgrading, particularly in respect to lacquer coatings. Army, Navy and Air Force have at times indicated a willingness to allow deviations from the specifications originally designated to permit contractors to achieve economies in either time or cost through use of lacquer. All that is generally necessary is a check with the procurement office involved to discuss advantages and obtain approval.

One recent military specification is MIL-P-11414, covering a quick-drying, rust-inhibiting cellulose nitrate primer for use as a prime coat under lacquers and enamels. Demand for it arose from contractors reluctant to accept 6-8 hours of drying time for conventional primers. The specification was devised to

withstand the rich solvent action of hot lacquer, while providing a durable, adherent base for enamels. Pigment requirements are a minimum of 10 per cent zinc chromate and 50 per cent iron oxide, with a maximum of 40 per cent siliceous extenders. Nonvolatile vehicle calls for minimum of 30 per cent cellulose nitrate (dry), 55 per cent phthalic alkyd type resins (containing a minimum of 34 per cent phthalic anhydride), and 10-15 per cent plasticizers, with no resin or phenol. Volatile portion is a minimum of 30 per cent esters and ketones, 15-22 per cent alcohols and

Recently installed at Lincoln Electric Co., Cleveland, is this hot spray booth and equipment for finishing welders, one of which is shown coming from the booth at the left. Hot spraying means important savings in lacquer consumption



# LACQUER

maximum of 50 per cent hydrocarbons. The spec lists drying times as: Set to touch, 3 minutes maximum; dry through in 6 minutes and full hardness in 48 hours.

**Ammunition Is Covered**—Specification MIL-L-11195 covers lacquer (room temperature or hot spray) for ammunition, being issued last June. It details a fast-drying, one-coat finish for phosphated or primed shells, bombs, grenades and other ammunition components. It has also been designated as a finish coat for army tanks in 1.0 mil thickness, and conceivably may be considered for self-propelled guns, amphibious cargo carriers, buses and other ordnance equipment. Quantitative limits on the vehicle content of the lacquer are similar to the primer material, except that the minimum on esters and ketones is higher, being set at 37.5 per cent. Pigmentation is dependent upon the color desired, there being eight standard colors—white, black, light blue, red, yellow, olive drab, green and blue-gray.

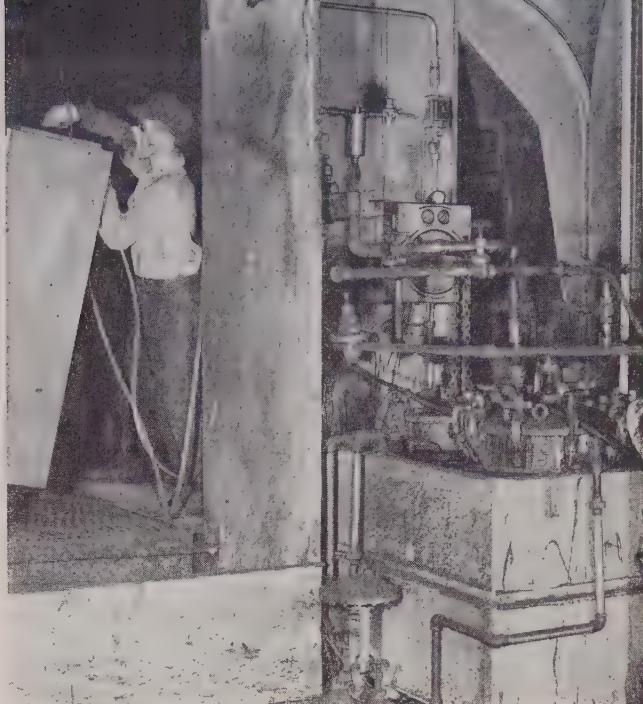
Detailed requirements are set forth in respect to hot spray application of this material: Atomization air pressure 50 pounds maximum, cold lacquer feed tank pressure 10-15 pounds, lacquer temperature at spray gun 160° F plus or minus 5°, distance from spray gun to work 6-8 inches, lacquer flow rate at nozzle 10-20 fluid ounces per minute, thermostatic setting on lacquer heating unit 175° F maximum.

Air drying time requirements (on glass) are: Set to touch 4-6 minutes, dry hard 8 minutes, dry through 10 minutes maximum, and full hardness (on metal) 48 hours.

The military specification covering quick-drying synthetic enamel for ammunition, issued last November, is MIL-E-10687. Vehicle specified is a styrenated glyceryl-phthalate-alkyd resin, and air drying time is: Set to touch 3-6 minutes, hard 10 minutes maximum, through 20 minutes maximum, and full hardness 72 hours.

**Aircraft Specs Co-ordinated** — Another relatively new lacquer spec is MIL-L-7178, applying to a cellulose nitrate glossy lacquer for aircraft uses. It is a co-ordination of two earlier specifications. Extensive work on this lacquer has been under guidance of the Philadelphia Navy Aeronautical Experimental Station to broaden its application by hot spray to naval aircraft. Bearing on this type of usage is the Navy's requirement for increased abrasion and gasoline resistance of the finish, based on experiences in the

For the future there are logical prospects for broadened military usage of both hot and cold-applied lacquer. They include: Metal and wood furniture, ordnance equipment and ammunition, military aircraft, procoating of cans, and other Quartermaster items such as typewriter cases, helmets, caskets, con-



Hot-spraying installation for coating interiors of furnace blower cabinets at Perfection Stove Co., Cleveland. Lacquer is sprayed under 30 pounds pressure automatically held at 150 °F

tainers and the like. There may even be some possibilities in coating structural steel sections such as Bailey bridge units, landing mats, etc. which are now enameled and call for prolonged drying.

**Quality Steadily Higher**—The five essential ingredients of lacquers—pigment, resin, plasticizer, nitrocellulose and solvent—have been subject to a steady improvement over recent years. New pigments have come along, in which chalking and fading can be controlled to any desired degree, while opacity has been increased so that full hiding is more easily obtained. Better resins are setting new standards in resistance to humidity, sunlight, weathering, tropical exposures, subzero temperatures, rapid changes in temperature and reflectance. Nitrocellulose itself has shown steadily higher quality, in terms of greater uniformity, clarity and stability. Solvents have multiplied and the lacquer manufacturer is no longer limited to alcohols and esters derived from the fermentation process.

One important advance has been the development of higher solids "at the gun". By proper selection of resins and solvents, 25-35 per cent solids now can be sprayed cold, and up to 45 per cent solids by hot spray, instead of the 15-20 per cent of a few years ago.

**Hot Lacquering Expands** — Along with this has come widespread adoption of the hot-spray method of application. This is a matter of simple economics. As lacquer temperature goes up, its viscosity decreases; in other words it is thinned by heat instead of extra solvents. The heat (150-160° F) is induced either by a special type of gun or with a separate heater tank, coils, pump, etc. The lacquer solids thus are applied with far less dilution, which means a higher proportion of solids per coat, fewer coats, less labor, less

solvent—all of which more than offset the added cost of the heating equipment. An example of the awareness of the military to these new developments is the above discussed MIL-L-11195 where as much as 45 per cent solids in certain colors may be called for.

It is estimated there are approximately 4000 heating units now in operation in the finishing industry, about 1500 of them being sold last year alone. There are at least eight types available, brief descriptions of which follow:

1. Arco Co., Cleveland, has a unit which is a small heat exchanger and can be inserted in the fluid line, either adjacent to the spray gun or a few feet from it. The heating medium is steam. A feature is that heat is applied to the lacquer only as used; thus there is efficient delivery of hot lacquer to the gun without the need of a circulating system. Capacity of the present design is  $1\frac{1}{2}$  pints per minute at 160° F, although higher capacities are being developed.

2. Beck Equipment Co., Cleveland, has an electric heating unit in which hot water or a permanent heat-transfer liquid is the heating medium. Lacquer is circulated to the spray gun through a circulating system powered by an air pump. Provision is made for heating the air used in spraying, if desired. Capacity is 1 quart per minute at 160° F. Larger capacity is possible by powering with a 4500-watt unit instead of the standard 3250-watt element. The equipment is mounted on a movable platform.

3. Bede Products Inc., Cleveland, also offers an electric heating unit (STEEL, March 12, P. 85), with the heating element and the coil containing the lacquer to be heated embedded in a single aluminum casting. Hot lacquer is circulated to the spray gun through a system powered by an air pump which draws directly from a lacquer container, so that a pressure tank is not required. Provision is made for heating the air to the gun, if desired. Capacity of the standard unit is slightly in excess of 1 quart per minute at 160° F. Also available is a larger heater having capacity of better than 2 quarts a minute.

4. DeVilbiss Co., Toledo, has a rather large sta-

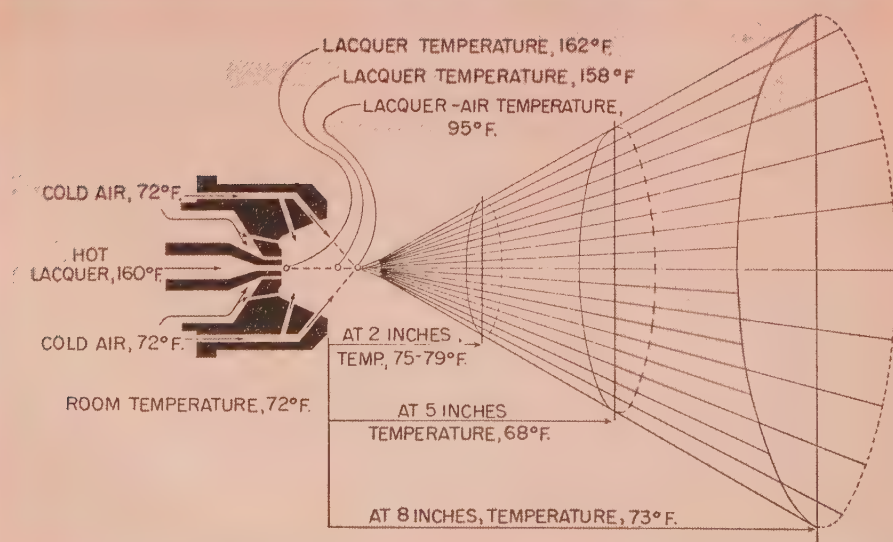
tionary-type unit with unusually high capacity. At least two spray guns can be operated without difficulty in maintaining temperature at 160° F and possibly as many as four guns might be attached. Heating medium is steam and the hot lacquer is circulated by means of an air pump.

5. M & E Mfg. Co., Indianapolis, furnishes an electric unit with temperature control fully adjustable to permit setting anywhere from 100 to 200° F. Heating medium is hot water, and lacquer is circulated by either an air or electric pump, whichever is preferred. Circulating system is tin-lined throughout to prevent discoloration of the lacquer. Capacity is sufficient to permit operation of up to three guns, maintaining temperature at a minimum of 150° F. Equipment is mounted on a movable platform.

6. Svenska M. A. Grief, Sweden, through distributor Douglas Wilson & Co. Inc., New York, manufactures a small heat exchanger which can be attached to the spray gun. Heating medium is air which is heated by an electric element. The design calls for the heated air to be used to atomize the lacquer being sprayed. A small amount of air is bled constantly through the gun, even when no lacquer is being sprayed. Hot lacquer can be delivered to the gun without need of a circulating system, making the equipment relatively easy to clean, always a troublesome problem in any type of spraying operation, hot or otherwise.

7. Industrial Sales Co. of California, Pasadena, Calif., supplies a heating unit comprising a hermetically sealed and evacuated heat exchanger which has been applied to various models ranging in capacities from 6 to 25 gallons per hour. Standard types will raise fluid temperature to 100° F at any rate of flow up to the rated capacity of the heater. Heat is provided by a Nichrome blanket element. Circulation of hot lacquer is by means of an air motor or explosion-proof electric motor. A movable platform is used.

8. Reliable Products Mfg. Co., Brooklyn, N. Y., manufactures an electrical unit with the coil containing the lacquer immersed in a heat-transfer liquid



Temperatures found during spraying of lacquer at 162° F, using room temperature air (72° F) for atomization. Lacquer as deposited on the target 8 inches from the gun is at approximately room temperature, greatly reducing chances of blushing during application

which prevents direct contact with the heating unit. Present units are built with or without air heating coils, and special designs with capacities of up to 500 gallons per hour, steam or electric operated or in combination, are available.

The hot-spray process originally was patented by Commercial Solvents Corp. About a year ago this company dedicated the patent to the entire paint, varnish and lacquer industry without cost or restriction. Hercules Powder Co., Wilmington, Del., manufacturer of nitrocellulose ingredients from which lacquers are produced, has been effectively carrying the story of hot-spray lacquer to industry, and evaluates the positive side of the case for hot spraying approximately this way:

*Solids are higher and the thickness obtained for each pass is greater.* A lacquer which at room temperature cannot be sprayed above 21 per cent solids, can be sprayed at 30 per cent solids when heated to 150-160° F at the gun.

*Solvent waste is lower.* A typical lacquer at 21 per cent solids uses 3.76 pounds of solvent to lay down 1 pound of solids. At 30 per cent solids only 2.33 pounds of solvent are used per pound of solids.

*Coverage per gallon is increased.* If 1 gallon of lacquer, applied cold at 21 per cent solids, will finish 100 units, then 1 gallon of the lacquer spray hot with 30 per cent solids will finish 143 units, with the same film thickness. It must also be appreciated that the hot lacquer formulation is somewhat more expensive than the conventional cold lacquer mix, because of the higher solids content.

*Fewer coats are needed.* Experience seems to indicate that by spraying hot, at the higher solids content, two coats will be the equivalent of three sprayed cold. This, in effect, means an increase in the plant finishing capacity of 33⅓ per cent or, in the case of one hot coat replacing two cold, a 50 per cent increase, in terms of floor space, spray guns, operators, compressor capacity, etc.

*Finish has better flowout, less tendency to sag.* Evidence indicates that heavy films flow out better than thin ones, and also are less inclined to sag. For example, one lacquer applied to a vertical surface at room temperature sagged when a film thicker than 0.001-inch was applied. The same lacquer solids, applied at 160° F in a hot-spray solvent formulation, did not sag when 0.002-inch of film was applied.

*Blushing is eliminated.* In some areas, blushing is a major problem, particularly during humid weather. Moisture condenses on freshly sprayed lacquer droplets as they are cooled by rapid evaporation of the solvent and clouds the film. With hot spraying, it is virtually impossible to create a blushing condition.

*Toughness and cold-check resistance are better.* When lacquers are formulated specifically for high-solids application, it is possible to use higher viscosity materials, thus providing films with greater cold-check resistance, tensile strength and toughness, at no loss of solids.

*Contact Temperature 20° Higher*—Lacquer applied at 160° F has been found to be at room temperature when sprayed on an object 8 inches from the spray gun. This is in contrast to regular lacquers, which



Application of aircraft finishes by the hot spray method is broadening. Here is a typical operation at Douglas Aircraft Co. where a wing section is being processed. Photo courtesy Hercules Powder Co.

are approximately 20° F below room temperature 8 inches from the gun. Laboratory tests have shown that hot air is not beneficial in applying hot lacquer.

The nonvolatile ingredients of a hot lacquer need be no different than in a room-temperature material. Solvents, however, must be changed. To spray at 160° F it is advisable to eliminate fast-evaporating solvents such as acetone, ethyl acetate, methyl alcohol, etc., from the blend. Hot lacquers usually contain 40-55 per cent more solids than room temperature lacquers. They must be kept free from highly reactive pigments and dyes which are not heat stable. Many of the advantages of spraying nitrocellulose lacquers at elevated temperatures can be translated to hot lacquers based on ethyl cellulose, cellulose acetate, high-viscosity vinyl resins or chlorinated rubber.

An important attribute of lacquer in the light of today's supply conditions is its availability. Large-scale production capacity is available, not only for the finished lacquers, but also for nitrocellulose and the other ingredients. In addition, lacquers are not tied to any one critical material. Coatings of comparable quality can be formulated from a wide variety of plasticizers, resins and solvents. If, in total mobilization, certain materials should become more critically needed for something other than coatings, alternates are available without sacrifice of quality.

Phthalic anhydride is a resin material for enamels and laquers which is in extremely short supply today and, in spite of expanded plant facilities for its production, will remain short of expected demand through 1952. It is required in many important military applications other than protective coatings. However, the supply of nitrocellulose is ample and there is no shortage of its basic raw materials.

**STREAMLINED TOOL SHOPS:** At the sixth national meeting of National Tool & Die Manufacturers Association in St. Louis, I heard a lot of discussion of ways and means of attracting and holding the fine craftsmen who form the backbone of this key industry.

Of the many suggestions made, the one which impressed me most was that tool and die shops should be made superlatively good places in which to work, if good men are to be expected to gravitate to them instead of away from them. That suggestion impressed me because lately I have visited several shops which acted upon it. They represent practical streamlining which promotes smooth customer relations as well as smooth industrial relations.

Some of these plants are brand new, both as to buildings and as to equipment. In such cases the streamlining job has been largely a matter of good industrial architecture keyed in with good industrial engineering—plus ability and money to get the latest new machines and tools. Others are old plants which have been refurbished and rearranged—and the equipment rebuilt and retooled as far as possible in line with modern standards. This requires even more ingenuity than the setting up of an entirely new establishment.

It is not enough merely to build and re-equip or to rebuild and recondition. Having done those things, rigid rules of plant housekeeping must be established and maintained so there will be no relapse into the conditions of the traditional dirty machine shop. On the face of it, all this may seem costly. In the long pull, however, money so spent will be returned manyfold in the form of reduction in accidents, better work, and less spoilage, reduced labor turnover and favorable impressions on customers and prospects.

**MACHINES BEHIND THE GUNS:** Despite predictions to the contrary, artillery continues to be a decisive factor in modern warfare. That is borne out by recently released news photos showing acres of empty shell cases collected in Korea—presumably for reloading.

Unlike these shell cases, projectiles are expendable items. Behind the thousands of guns in the field there must be shell-making machinery capable of keeping up the supply of live ammunition. Any time a cold war grows hot, that means a lot of machine tools.

During World War II, untold thousands of standard engine lathes, critically needed on other more complicated defense work, were tied up on shell machining. Special purpose machines eased the situation somewhat but to nowhere near the extent that should have been the case.

Now that our stockpile of live ammunition rapidly is being depleted by heavy artillery action in Korea, shell production looms up again as an immediate and critical phase of defense work. At this time, when standard machines are harder to come by and more

critically needed than at any time during World War II, it will indeed be too bad if better advantage is not taken of special purpose shell lathes than was true between 1941 and 1945.

A typical shell lathe is designed simply and solely for top speed machining—turning, contouring, grooving and end-facing—of a particular caliber of shells from forged or sawed steel blanks. It is a rugged, powerful and reasonably accurate machine from which all mechanical and artistic frills have been eliminated.

It can be mass-produced in shops other than regular machine tool plants, by workmen who are not regular machine tool builders. It can be operated by relatively unskilled help—including women. It has no possible use other than for making shells. Therefore it will not glut the peacetime machine tool market if and when we ever again have one.

In other words, if more heat immediately is put on the shell lathe program, some of the heat can be taken off the inefficient subcontracting programs and uneconomic plant expansion programs with which many of our regular machine tool builders now are being threatened.

**IMPROVISATION:** In normal times it is customary in American mass production industries to install machine tools selected or designed especially to suit particular jobs. That has proved to be a remarkably successful policy on peacetime production and would be equally so on defense work—if such highly selective machines could be obtained. Unfortunately, delivery dates range from six months to two years. History is being made much too fast to allow waiting that long.

Therefore, improvisation—not always the best way in peacetime—is the order of the day in many defense plants. Some of the best places to see successful operations carried out in unusual machines are in machine tool plants.

Every machine tool builder naturally likes to make maximum use of machines of his own make. For that reason it is common to find lathes set up as precision boring machines, in lathe plants; planers utilized on work which ordinarily would be milled, in plants building planers; and grinders doing work which ordinarily would be turned in plants building cylindrical grinders.

These setups involve ingenious fixtures and tooling which make the respective machines highly effective for the unusual jobs to which they are applied. Contractors and subcontractors of war work might do well to travel around among the machine tool plants. They should study some of these ingenious and unusual setups before crying too copiously in their beer because they cannot immediately procure exactly the machines specified in the book for work they have undertaken. What machine tool builders already have done, they certainly can do at this time when American ingenuity is the hope of the western world.

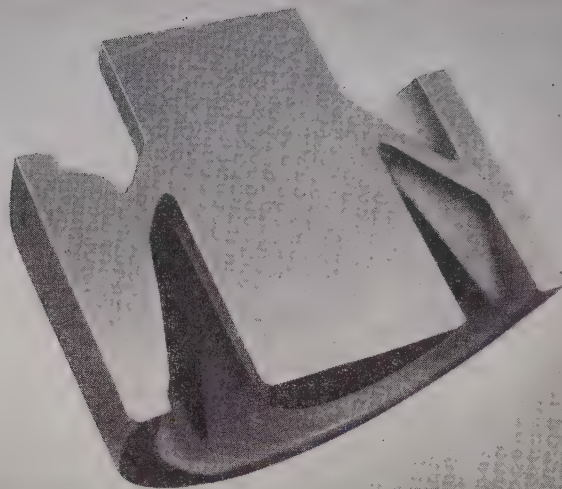
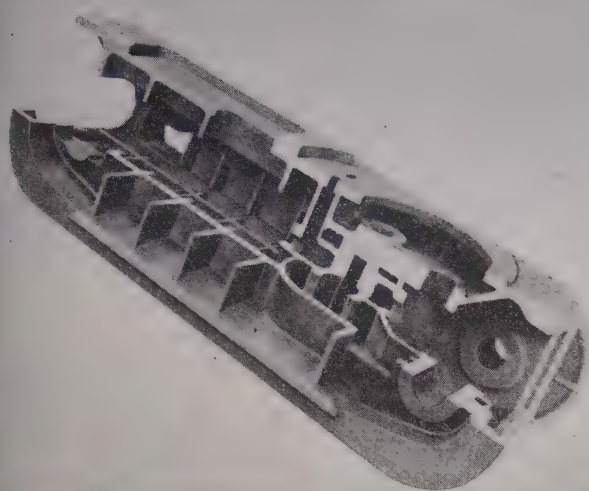


Fig. 1—Left, section through a vehicle casing of a machine cast in Meehanite metal with a tensile strength of over 55,000 psi despite intricacy of design. Right, complex shape demonstrates uniform solidity despite wide variation in thickness of adjoining sections

By C. R. AUSTIN  
Assistant to President  
Meehanite Metal Corp.  
New Rochelle, N. Y.

## ***Casting Soundness Can Be Controlled***

**Design and materials engineers, working closely with foundry technicians can reduce shrinks and general porosity in castings, saving time, labor and materials and eliminating the hazards of using defective castings**

CONTROL of casting soundness and casting imperfections belongs primarily to the foundry manufacturing the castings. Persistence of defects, however, including shrinks and general porosity has stimulated activity in the field of casting impregnation methods, particularly in products subjected to fluid pressures.

Tests under fluid pressure are only one phase in which the casting consumer industry encounters delay and expense in attempting to patch up a product so that it will adequately serve its functional purpose. Shrinks and porosity lead to such problems as lowering assumed or specified engineering properties on which the materials engineer has based his design. Casting unsoundness has also been the cause of much lost time and casting rejects in the machine shop.

**Many Causes for Defects**—There are numerous causes for the defects termed casting porosity, including shrinkage and gasified metal. But in good foundry practice most porosity defects can probably be traced to the simple fact that any given amount of molten metal poured into some form occupies

less volume when completely solid. In nonferrous metals and in steel, the volume shrinkage in the liquid-solid change must be compensated for entirely by feed metal, if casting soundness is to be assured.

This is a relatively simple problem when design permits progressive solidification to proceed from lightest to heaviest sections, with large risers or feeder heads suitably located on the last sections to solidify. Demands on design frequently prohibit this simplification of form, hence porosity and shrinks tend to be accepted as inevitable.

Founders of iron castings are in a particularly favorable position in the production of porous-free castings. The liquid-solid shrinkage is largely compensated for by the separation of a low density-high volume constituent, graphite, during the range of

Fig. 2 (left)—Valve body machined from a solid block of Meehanite which must be cast completely free of defects, sponginess or porosity

Fig. 3 (right)—Large four-valve diesel engine head cast in Meehanite. Sections of the casting range from ¼-inch in the frame head passages and cylinder walls to 2 inches on the firing face of the cylinder head

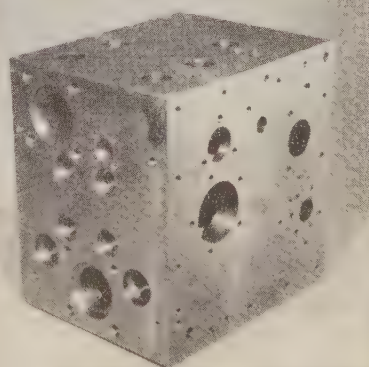




Fig. 4—This small hydraulic cylinder casting was tested successfully at 32,000 psi

temperature fall from the liquid to the solid state. This graphite has a specific gravity of about 2.25 as compared with 7.85 for metallic iron. Thus the graphite may occupy some 10 to 11 per cent, by volume, of the mass of the solid casting and the total volume of the solid casting may approximate the initial volume of the liquid metal poured into the mold.

**Consult the Designer**—Considerable skill is still demanded on the part of the foundry technologist to assure adequate flow of liquid metal to all sections of the castings by suitable gating and risering systems. Much can be accomplished from consultation with the design engineer so that sound principles of casting design, as influenced by foundry practice, can be guaranteed.

For several years these matters have been cardinal principles in the manufacture of Meehanite castings. The materials engineer has at his command castings with:

1. Freedom from porosity.
2. Uniformity of structure and properties despite

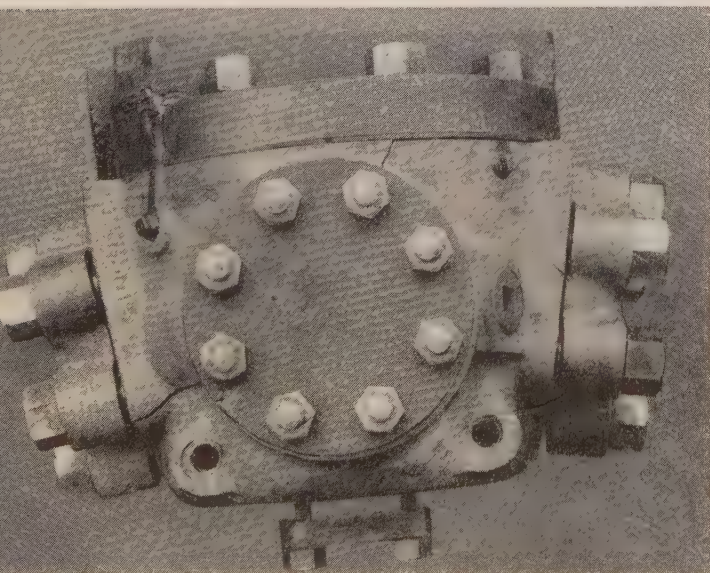


Fig. 5—Meehanite compressor cylinder designed for an operating pressure of 1500 psi functioned perfectly up to a pressure of 8000 psi. Cracking has produced at 8000 psi fluid pressure, or about 550 per cent overload

section variation.

### 3. Mechanical properties according to specification

Factors which have led to the wide demand for Meehanite castings by design and materials engineers include control of the constitution and process wedge values in relation to the section of the castings to be made and their effect on what has been termed solidity of penetration of the iron. These matters are entirely the concern of the foundry technologists and related to casting manufacture, but they are of vital importance to the consumer in terms of the functional operation of the material.

**Results Impressive**—Accordingly, a few examples taken from a variety of industrial applications are included to portray the effectiveness and results of modern foundry technology from a variety of actual service records.

The two castings in Fig. 1 illustrate uniform solidity in two widely different types of castings. The picture on the left is a section through a vehicle casing of a machine cast in Meehanite metal with a tensile strength of over 55,000 psi despite intricacy of design. On the right the complex shape demonstrates uniform solidity despite the wide variation in thickness of adjoining sections.

Fig. 2 shows a valve body machined from a solid 12 inch side block of Meehanite metal. This part exemplifies the success in overcoming mass influence in terms of complete freedom from casting defects, sponginess or porosity. This unit was formerly made in steel forgings. Any unsoundness or trace of sponginess in the casting, revealed on machining would be an immediate cause for rejection.

An interesting example where density and solidity are paramount is illustrated in Fig. 3 which shows a large four-valve diesel engine head cast in Meehanite metal. This casting contains sections ranging from 1/4 inch in the frame head passages and cylinder walls to 2 inches on the firing face of the cylinder head. All passageways have to be watertight with close tolerances maintained.

The small hydraulic cylinder Meehanite casting reproduced in Fig. 4 was given a test of 32,000 pounds and passed inspection. Incidentally, this small unit is required for a 3-5 ton capacity jack with a double action twin piston pump.

Another example is a Meehanite compressor cylinder designed for an operating pressure of 1500 psi but functioning perfectly up to a pressure of 8000 psi. The cracking produced at 8000 psi fluid pressure or about 550 per cent overload can be seen in Fig. 5.

By R. F. ONSRUD  
*Designer and General Manager*  
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Chicago

# Skin Milling Machine

## CUTS WING SECTIONS FASTER

SKINS and structures used in high speed aircraft are machined efficiently on a new power router—skin mill built by Onsrud Machine Works. Integrally stiffened wing skins require exceptional metal removal to form ribs and stiffening sections for intra-wing members while providing a smooth exterior airfoil surface. As much as 85 to 90 per cent of the work piece must be removed in chips at the same time producing the specifications to micrometer measurements.

Since the metal removal of stressed skins consists of bottom milling or piercing with end mill cutters, quantity production of aircraft demands something faster than the hand fed arm router or tracer controlled mills. In either case the horsepower was too limited or the feed too slow.

**Works Like Shaper**—Using a new twist to wood-working shaper design principles, the so-called Invomill cuts any configuration, internally or externally, will bottom mill or pierce in materials up to 2 inches thick. It is power fed and guided to a template. Operation is simple and semiautomatic in that the accuracy is determined by the template rather than the operator's ability. Cuts have been made within plus or minus 0.001-inch. Also heavy cutting has been produced.

One of its novel features is ability to change or reverse direction without stoppage or pause whether the design requires internal or external corners. In either case a uniform rate of speed is maintained, and there is no danger of an inside nick or external bulb.

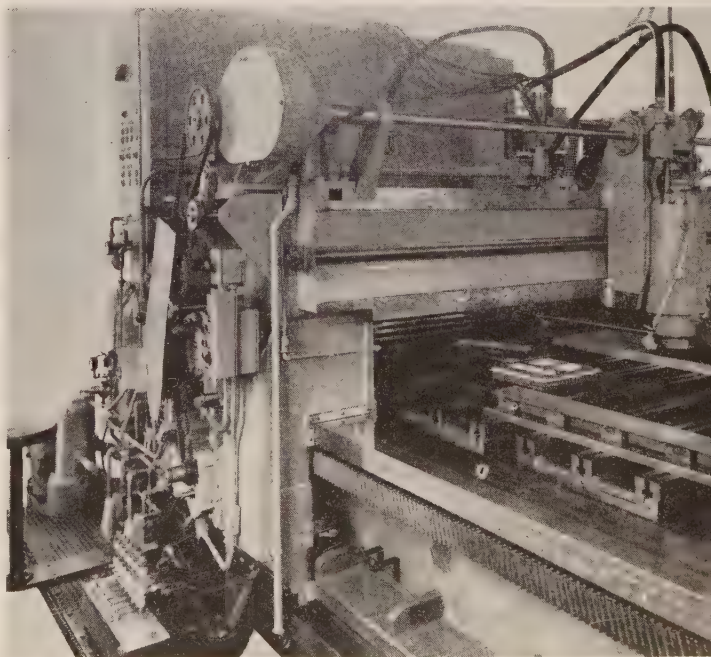
A 30 hp, 15,000 rpm high cycle, direct motor driven spindle is mounted within a 360-degree rotating unit, which in turn is mounted within a cross slide and a gantry type carriage. The motor unit is pivot mounted within the drum, being pressure loaded; its guide collar to template. In operation, the operator is seated and rides with the carriage. Through two control levers . . . one for the rotary movement and the other a joy-stick for the combined movement of carriage and cross slide . . . he controls the feed manually but only approximately to template-shape by means of a center indicator. His accuracy need be only within 1 inch plus or minus without affecting the micrometer accuracy of the completed work.

**Path Limited**—G-E amplidyne motor controls are so arranged that all provide forward and reverse with infinite range of speeds from 0 to maximum which are approximately 140 inches per minute. Should a novice operator get off the beam of his 2-inch wide path, signal lights will flash. He may then correct the position or continue. Safety devices will stop the machine if he enters beyond a 4-inch path (plus or minus 2 inches). Foot-operated air lifts

are provided for the rise and fall movements of the cutterhead and also the template follower.

For the production of tapered skins on sheets or integrally stiffened plates, the unit has a 40-hp motor (up to 100 hp can be provided) which mills tapers transversely or longitudinally; and with suitable controls, a combination of both. Sine tables are unnecessary since the motor spindle is adjustable to the perpendicular of the taper. Transverse taper is obtained by the setting of a slide rail and the longitudinal taper through a vertical feed actuated from the carriage movement. Surface finishes of 6 to 10 M.I.S. are obtained.

The bed is furnished in 15-foot long sections with ground table plates having a working area 60 inches wide; thus the machine may be of any length and have two or more carriages. Travel type carriage eliminates superfluous bed and floor area greatly reducing the amount of iron and steel generally used in machines for milling nonferrous metals. The cutter coolant is provided for by a centrifugal pump mounted on the carriage with a return receptable built into the bed. Screw conveyors for chip removal are also provided in the bed. Table sections are grilled to provide a gravity disposal of chips and coolant.



Onsrud Invomill operates on principle used on automatic woodworking shapers. The unit cuts any configuration, internally or externally, will bottom mill or pierce in materials up to 2 inches thick

# TOOL STEELS

## ... Developed for Varied Applications

Improved manufacturing techniques in tool steel industry lead to production of steels of high impact strength, high fatigue resistance, high hardness, resistance to wear and abrasion and ability to heat treat for desired properties

PROPERTIES of tool steel depend upon many variables in addition to the analysis. This is one of the main distinctions which must be borne in mind when considering tool steels and comparing them with construction steels. The tool steel industry is faced with the development of new steels and the improvement of older grades of steel so that steels will keep abreast of engineering needs in the tool and die field. What was considered as tool steel 50 years ago for hand tools such as files, hatchets, axes and cutlery, can now be considered as tonnage mill products, or high production items for the tool steel industry.

During the last 50 years, the range of tool steels available for cutting, shaping, and forming of metals and other materials increased something like one-hundred-fold. One of the tasks of the tool steel industry over the past 20 years has been to classify this mass of "alloy tool steels" into a workable system of tool steel selection, based upon the specific job the tool steel was expected to do. In this classification it is sometimes necessary to differentiate between "die steels" and "tool steels," even though both names apply to steel made by the tool steel industry.

**Classification**—The base for most systems of die steel classification is the 1.00/1.10 per cent carbon water hardening tool steel since this is the most common of all the die steels. Some steels have been developed which show greater wear resistance than the 1.10 per cent carbon tool steel such as water hardening steel containing 1.30 per cent carbon and 3.50 per cent tungsten. Several other steels have been commonly used where greater toughness or resistance to impact is desired than in the 1.10 per cent carbon steel, such as a water hardening steel containing 0.50 per cent carbon, 1.00 per cent silicon, 0.50 per cent molybdenum or 0.60 per cent carbon, 2.00 per cent silicon, 1.00 per cent manganese. These steels get into the range of steels commonly used for chisels and other chipping tools where resistance to spalling and chipping is important.

Oil hardening decreases quenching hazards, decreases internal stress on hardening, and in general leads to much smaller size changes after hardening and drawing than water quenching, but requires that some alloying elements be present to enable the steel to be hardened by oil quenching.

The starting point for the oil hardening classifica-

tion can be a grade of steel containing 0.90 per cent carbon, 1.75 per cent manganese steel (with or without small quantities of chromium and tungsten) which is oil hardening, easy to machine because of ease in annealing, and will show a small size change after oil quenching. Among the oil hardening steels, some steels will show a greater resistance to wear than the 0.90 per cent carbon, 1.75 per cent manganese steel. An example of such a steel would be one containing 2.10 per cent carbon, 12.00 per cent chromium with or without small percentages of molybdenum, nickel or cobalt. This is the familiar high-carbon high-chromium analysis which is popular for lamination dies and other stamping dies where resistance to wear on the cutting edge is important.

In the same way, steels can be found which will be considerably tougher than the 0.90 per cent carbon, 1.75 per cent manganese steel. An example of such a steel would be a 0.60 per cent carbon, 2.00 per cent silicon, 1.00 per cent manganese chisel steel which would be oil hardening, or a steel containing 0.70 per cent carbon, 1.00 per cent chromium and 1.50 per

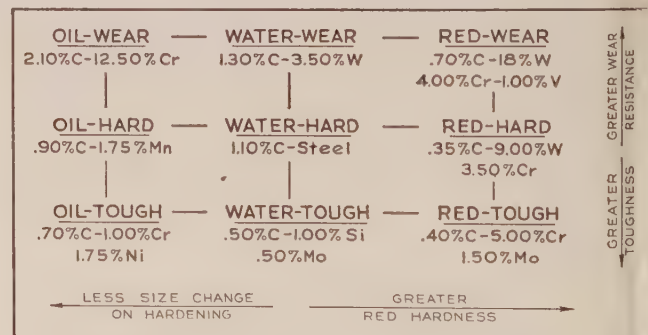


Fig. 1—Classification of die steels

cent nickel. Here again these two would be oil hardening and would have the main property of being considerably tougher than the standard oil hardening steel mentioned formerly.

**Hot Working Applications**—In the same way, steels can be sought which would have greater hot hardness than the 1.10 per cent carbon water hardening steel or the 0.90 per cent carbon, 1.75 per cent manganese steel. Such steels would be commonly used for hot working applications, such as extrusion dies, drop forging dies, Ajax upsetter dies in hot working, and

From a paper presented at the 1951 Philadelphia regional meeting of the American Iron and Steel Institute

ther applications where heat is involved so that the temper would be drawn out of the ordinary oil or water hardening steels mentioned previously. The first steel that comes to mind would be the 0.35 per cent carbon, 8.00/10.00 per cent tungsten, 3.50 per cent chromium steel which is widely used as a hot work steel for extrusion dies, and other forging applications.

Here again, a system of classification can be made to indicate steels which would be somewhat tougher than this 8.00/10.00 per cent tungsten grade and which would be more resistant to impact chipping and like on forging. Such a steel would be the 0.40 per cent carbon, 5.00 per cent chromium, 1.50 per cent molybdenum steel commonly used throughout the die casting field, extrusion field, and other severe upsetting operations where resistance to breakage

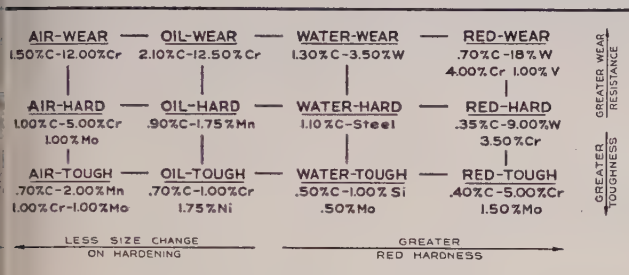


Fig. 2—Matched die steels

would be greater than the 8.00/10.00 per cent tungsten grade. Also, a more wear resistant steel than the 0.35 per cent carbon, 9.00 per cent tungsten steel brings us into the field of so-called high-speed steels represented by the familiar 0.70 per cent carbon, 18.00 per cent tungsten, 4.00 per cent chromium, 1.00 per cent vanadium steel and the molybdenum high-speed steels. Such a system of classification of die steels could appear somewhat as that shown in Fig. 1.

Starting with the 1.10 per cent carbon water hardening steel, greater wear resistance will be obtained if one goes north on the diagram and greater toughness will be obtained if one goes south on the diagram. Less size change will be obtained if one goes west on the diagram, and greater red hardness will be obtained if one goes east on the diagram.

Modern tool designers have been called upon to design dies which would have been considered impractical to heat treat not too many years ago. Each tool steel imposes definite limitations on the design and shapes of tools which can be made from it. Important considerations are the size change and the distortion of the steel when quenched to make the tool, and limitations on the size of sections which can be successfully hardened from any one steel. The trend in tool making is to demand tools which involve an extremely intricate design, or a section so unbalanced that even the oil hardening grades of steel will not produce satisfactory results. This trend in tool and die making to demand greater accuracy in hardening with greater freedom from cracking during quenching in intricate sections accounts for the gain in popularity and use of air hardening steels as compared to oil hardening grades for these specialized applications. There is also the application of air hard-

ening tool steels in making large tools which cannot be satisfactorily hardened from oil hardening steels because of hardenability considerations and limitations on oil quenching equipment in handling large and heavy tools.

**Air Hardening**—Air hardening tool steels were developed to meet the following specialized applications in tool steel designing:

1. The steel should have less distortion in heat treatment than could be obtained with the conventional oil hardening steels.

2. The proposed tool would have extremely intricate sections involving both thin and heavy sections where less cracking hazard and minimum size change are desired after heat treatment.

3. The steel should harden through uniformly in large sections.

4. The size of the tool to be made from the steel would be too large for the oil quenching equipment available and the simple procedure of air quenching would be the logical answer.

An air hardening steel which has won acceptance for general purpose use is a 1.00 per cent carbon, 5.00 per cent chromium, 1.50 per cent molybdenum grade of air hardening steel. This steel will show an exceptionally small size change on air hardening and, because of its air hardening property, will show considerably less cracking on heat treatment than oil or water hardening steels. Proceeding as before to classify these air hardening steels, a steel which will show more abrasion or wear resistance than the conventional 1.00 per cent carbon, 5.00 per cent chromium, 1.50 per cent molybdenum steels, is a steel containing 1.50 per cent carbon, 12.50 per cent chromium, and small amounts of vanadium and molybdenum.

To find a tougher grade of air hardening tool steel, we developed a grade of steel containing 0.70 per cent carbon, 2.00 per cent manganese, 1.00 per cent

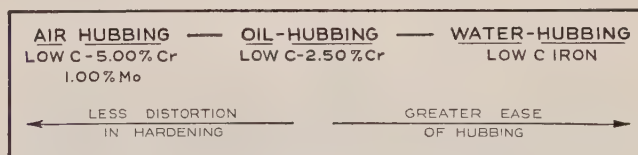
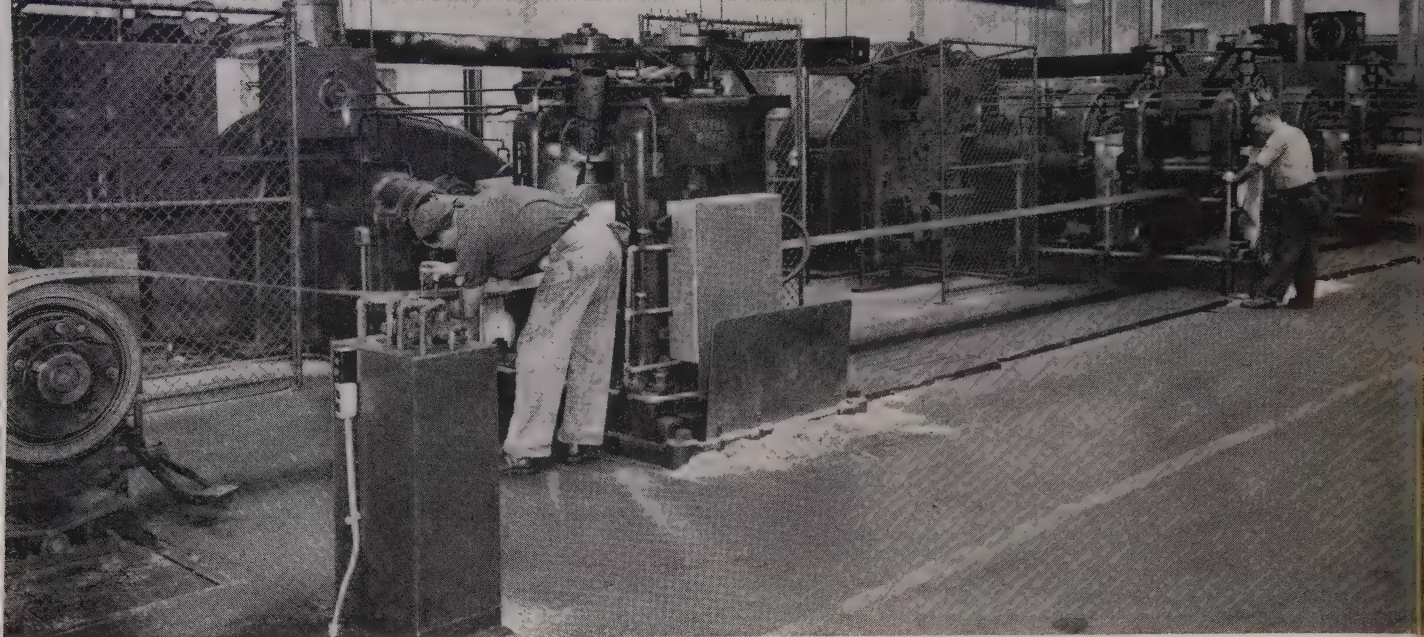


Fig. 3—Matched hubbing steels

chromium and 1.00 per cent molybdenum. This is an extremely deep hardening air hardening steel and can be air hardened from temperatures of about 1550°F. The low alloy content of the 0.60 per cent to 0.80 per cent carbon, 2.00 per cent manganese, 1.00 per cent chromium, 1.00 per cent molybdenum steel leads to ease in forging large and intricate sections and ease of handling in heat treatment because of its lower hardening temperature. This steel shows greater resistance to impact shock, ease of forging, and the minimum of size change and distortion in the air hardening group.

Referring to Fig. 1, the air hardening steel classification can be put onto this diagram and is shown in Fig. 2. The air hardening steels naturally fall to the west of the oil hardening steels because of their less size change on hardening.

**High-Speed Steel**—In the case of tool steels used  
(Please turn to page 98)



Two-high 3-stand tandem cold reduction mill installation for "tailoring" steel to exact customer specifications

## Steel Warehouse Installs Cold Reduction Strip Mill

The Chicago area steel distributor, Korhummel-Heffron & Preiss, believes that the warehouse industry must continually be seeking ways to further service their customers. This new rolling mill facility is a step in that direction

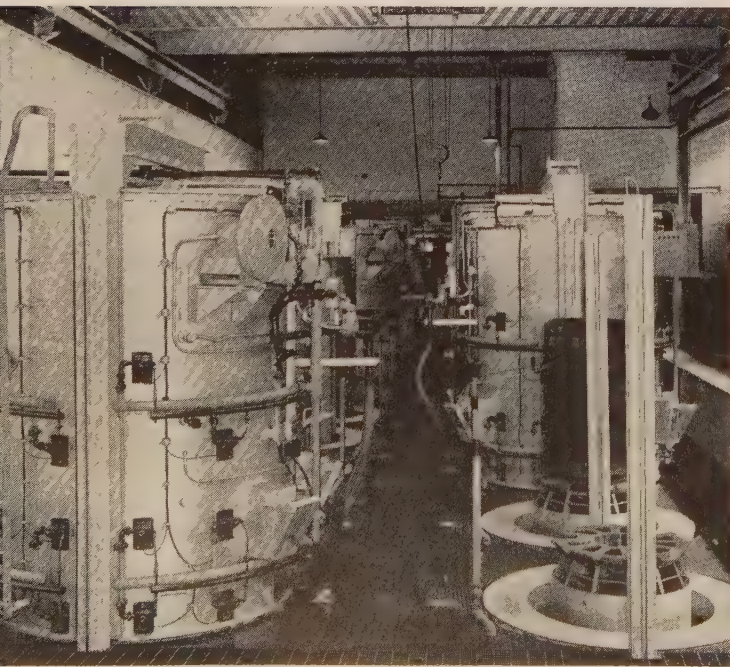
STRIP STEEL "tailored" to customer's specific requirements—an innovation in steel warehousing—being produced at the Evanston, Ill., plant of Korhummel, Heffron & Preiss Steel Co. This is particularly important in light of today's steel shortage and the fact that cause stock can be re-rolled into useful sizes and tempers from otherwise dead inventory.

Rolling facilities consist of a two-high 700 hp, 3-stand tandem, 16-inch electrically operated cold reducing mill. Facilities are also available for bright annealing and pickling the steel coils. Capacity is about 2000 tons per month.

Hot rolled coils move by crane from the storage bays, through the scale breaker, into the coil pickling department. In the pickling operation, coils are loosened and revolved in a reverse direction to unwinding so that all area of the steel strip receives the proper treatment during pickling, neutralizing and rinsing.

**Maximum Reduction of 50% —** The mill's three stands reduce the steel up to a maximum of 50 percent in thickness. The material is re-coiled at the outlet and if of the proper gage and temper, moves to the slitting bay where a battery of 14 machines cut the steel to customer's ordered widths.

In many instances, however, material will require bright annealing before and after passing through the mill, especially where more than one mill pass is necessary to obtain the required gage or temper. For this reason, specially designed annealing furnaces have been installed by Continental Industrial Engineers Inc. of Chicago. This equipment occupying floor space of about 23 by 60 feet, consists of 10



General view of the warehouse's bright annealing facilities for strip and round-edge flat wire

# Here's "on the job" proof of furnace savings with

## B&W ALLMUL FIREBRICK

### BILLET HEATING FURNACE

**"ALLMUL  
cost half as much!"**

A builder of billet heating furnaces used an expensive electrically-fused mullite refractory in the piers and baffles as well as for the arches in the discharge end of the flue. Reason? Severe operating conditions at these points. Tests of B&W Allmul proved it withstood high temperatures equally well... cost approximately half as much. Result? Allmul is now standard for these locations.

### BUTT WELDING FURNACE

**"39 weeks  
instead of 6 weeks!"**

Semi-mullite brick bungs in the hottest part of a butt welding furnace spalled badly after six weeks. Allmul bungs in the same location were still going strong after 39 weeks—in better condition than the semi-mullite bungs after six weeks. Yet Allmul cost little more than the original semi-mullite refractory. Allmul is now used in uptake arches, uptake side walls and crossovers. Customer has ordered 30 carloads to date.

### CUPOLA FRONT-SLAGGER

**"ALLMUL has  
6 times the life plus..."**

Replacing super-duty firebrick in a cupola front-slagger of a malleable duplexing operation three times a week was an expensive chore. B&W Allmul in the same location lasts approximately two weeks... six times as long. Costs drop, too, because of savings due to less frequent relining.



What's behind the remarkable, money-saving performance of B&W Allmul Firebrick? The answer lies in its low first cost for a fused mullite brick and unique combination of excellent refractory properties: high hot load strength, high resistance to spalling, good volume stability, a high melting point of 3335F. Bulletin R-29 gives all the facts on Allmul. Write for your copy.

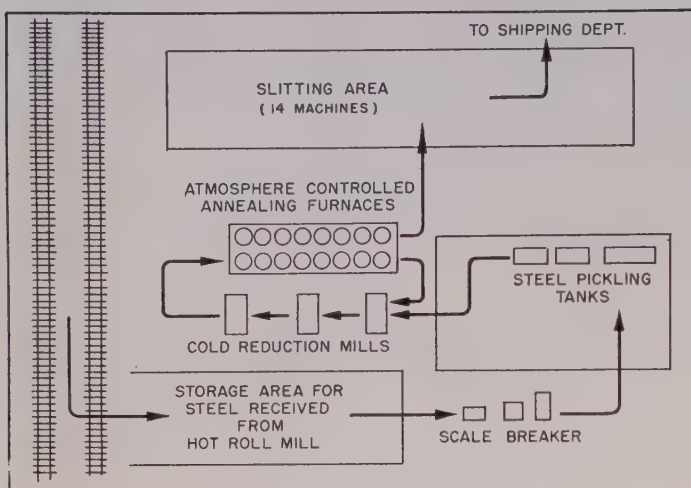


## BABCOCK & WILCOX

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Chemical Recovery Units... Seamless & Welded Tubes... Pulverizers... Fuel Burning Equipment... Pressure Vessels... Alloy Castings



Plan view of K-H&P's layout for pickling, rolling, annealing and slitting flat rolled steel. Note the smooth, efficient flow of material throughout the production cycle

"top hat" refractory-lined annealing furnaces, 18 alloy inner hoods and 16 alloy steel bases.

**Annealing Procedure**—During annealing operations, four bases are engaged in loading, four heating, four cooling and four unloading. In the loading operation, the coils on four alloy bases are covered with an inner hood, the hood being closed at the bottom with a water-cooled oil seal. A Continental inert-gas generator delivers a carefully controlled gas atmosphere into the hood, the gas being circulated by fans built into the bases so as to assure clean, scale-free surfaces on strip being processed.

A cylindrical "top hat" is then lowered onto the base and its inside temperature raised to the proper degree. The furnace builder also designed the gas system for producing propane used to fire the furnaces. The annealing cycle requires about 56 hours. Coils having been properly "soaked", the "top hats" are lifted off by suitable cranes and immediately lowered over four other bases, which have been previously loaded and are ready for their turn in the annealing cycle.

Annealed charges remaining under the hoods continue to receive inert gas till the temperature has dropped to approximately 500°F, temperature depending upon type of steel being annealed. Inert gas for the hoods must be "scrubbed;" therefore, the propane gas is led through the generator combustion chamber, a refrigerating unit and a scrubbing tank to remove all moisture.

**Seamless Tubing Re-Drawn**—Round edge flat wire in coils will also be processed with this equipment. It is proposed to add one additional furnace for annealing steel in straight lengths. The warehouse also has at hand facilities for re-drawing seamless tubing to produce special outside diameters and wall thicknesses specified by their customers. They do not produce the tubing but secure it from integrated mills as partially processed, hot finished or cold drawn tubular blanks.

They will use their new rolling capacity to supplement supplies from regular mill sources and to pro-

duce steel to standard as well as intermediate tempers and tolerances.

## Bottom Poured Ingots Discussed

Molten steel, normally poured into upright molds may also be forced upwards from the bottom, T. T. Watson, director of research, Lukens Steel Co., Coatesville, Pa., told the Philadelphia regional technical meeting of American Iron & Steel Institute. In the latter case, he said, when the steel becomes solid, the surface quality is so good it can be rolled directly into plates with just one mill operation.

Normal sized bottom poured ingots yield an average of about 5 per cent more plates than the conventional ingots which are poured from the top, Mr. Watson said. The good surface quality eliminates the need for a slabbing mill, and the overall quality of the steel is equally as good as that obtained in top pouring practice.

He said that since a slabbing mill is not used to reduce bottom poured ingots, every ingot must be tailor-made to obtain the type plate desired. Thus a wide variety of mold sizes is required. Bottom pouring practice serves a very useful purpose in the steel industry, particularly to the small producers, in making good quality ingots for the manufacture of steel plates. "Furthermore, it is the best practice for making small ingots," Mr. Watson said. Although there are hazards connected with bottom pouring, with the necessary controls the rewards that are received are ample to justify its use in the manufacture of steel plates.

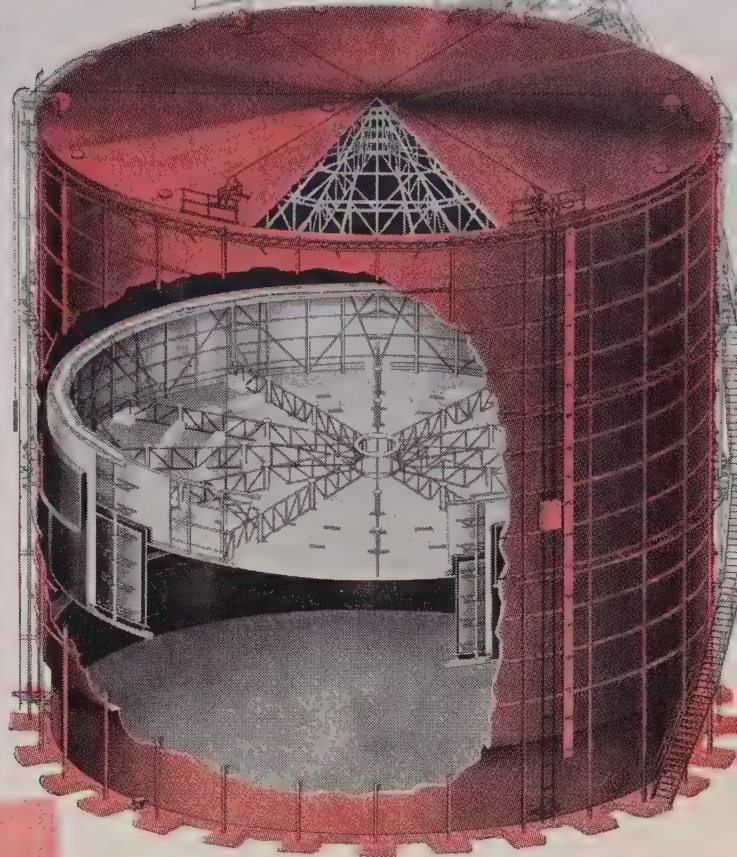
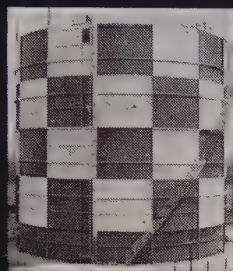
## Big Gain Made in Boring Job

As much as 129 per cent production increase is reported by Roney Inc., Inglewood, Calif., aircraft subcontractor, on the boring of rocket-housing tubes with the Hydro-Borer made by Hydro-Borer Co., Inglewood. Production rate on one operation was stepped up from 82 to 112 per hour. Another was boosted from 27 to 62 per hour.

Job specifications called for the first operation to bore to a depth of  $0.810 \pm 0.005$  with an ID of  $2.937 \pm 0.0005$ -inch. The second operation was to bore the opposite end to a depth of  $2.190 \pm 0.005$  to an ID of  $2.937 \pm 0.0005$ -inch. The material was 61ST-6AL aluminum tubing,  $3\frac{1}{4}$ -inch OD x 0.187-inch wall x 13.120 inches long. A 40 microinch finish was required.

Previous method of handling these tubes produced an out of round condition in the bore and ID and the 40 microinch finish was not consistently held. This was eliminated on the Hydro-Borer which held absolute concentricity and produced a finish of 30 microinches with tolerances of  $\pm 0.0003$ -inch.

Machine is set up to feed to adjustable stops and return automatically. Work is held stationary and the boring tool moves into the work hydraulically at a predetermined and constant rate of feed. Work holders were finished on the machine with fixtures located on the 2-inch OD front bearing to insure accuracy.



safe, simple,

See American  
Gas Association  
Builder's  
Committee Report  
(May, 1951)

As gasholders go, the Wiggins has a remarkably simple design. It has none of the complicated mechanisms of old-type gasholders. No materials that can be harmed by weather. Wiggins is the **ONLY** gasholder that uses no water, no tar, no grease. Wiggins assures no weather worries, no operating costs, no maintenance problems. It's the only gasholder with an absolutely dry, frictionless seal.

50 built *in three years*

Designed by the famous conservation authority, John Wiggins. Built and erected by General American.

The frictionless piston rises and falls with changes in the gas volume. The gas tightness and impermeability of the Wiggins dry seal has been proved in actual operation.

Can be built to any capacity. Old gasholders can be converted and capacity increased as much as 50%.

*write for new bulletin WG22*

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# Loading, Unloading Costs Slashed 75 Per Cent

By G. R. REYNOLDS  
Superintendent, United Stove Co.  
Ypsilanti, Mich.

FOR YEARS United Stove Co. has been bothered by a problem in shipping and receiving operations which is probably typical of many companies throughout the country. The problem is one of getting loads into and out of highway trucks quickly and economically when plant floor shipping and receiving areas and shop yard are all on the same level.

"Build a ramp and a dock" everyone suggested; and the management agreed that this was the most apparent solution. However, too many other things had to be considered. This construction would be a major project. In addition adjustable dock boards would have to be provided to compensate for different truck-bed levels. The high production rate would suffer because this is the only area available for shipping and receiving operations. This would only be a partial solution, since none of our small fleet of Baker trucks could be spared from their regular in-plant duties.

A special fork truck was decided upon, based on two considerations: First, many of the shipping containers were already equipped with casters. This meant that after the load was lifted up to the truck-

bed level it wouldn't be too difficult to push it further into the truck. Not ideal, but a small price to pay. The same operation in reverse would apply for unloading. The load could be pushed to the tail gate where the fork truck would then easily lift it off and lower it to the shop floor level.

Second consideration dealt with scrap. This plant manufactures oil stoves, ranges and heaters and does stamping work for the automotive industry—all of which generates large quantities of scrap sheet. Disposal was a problem, but now the special fork truck with the rollover device handles it very well.

Now that the truck has been in operation a while, results are gratifying. Savings of up to 75 per cent are being realized in loading and unloading operations, including scrap handling. Production rate is maintained without the disruptions which construction changes would have meant. This continued high production has kept the new truck busy with no idle time. Objectives have been accomplished at little expense, since the savings are paying for the truck.

## Aluminum Brazing Works Smoothly

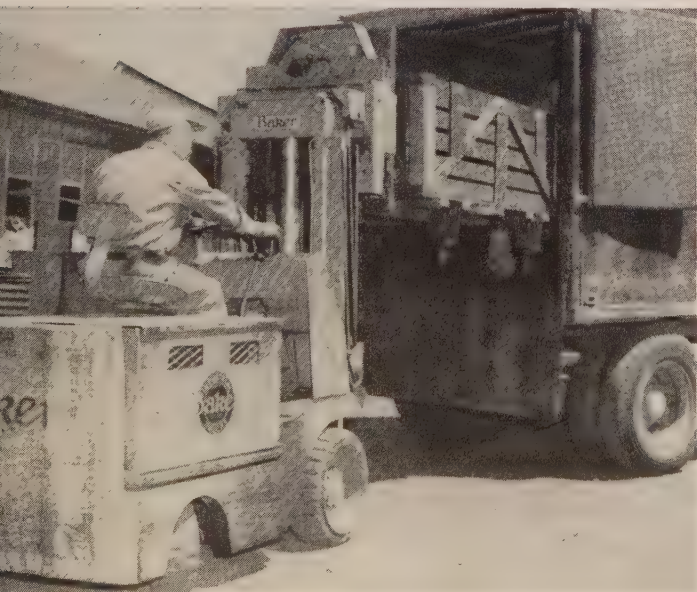
Mechanical joints at the corners of aluminum windows made by Aluminum Products Co., Houston, were costly and not satisfactory. So the company got together with Smithweld Co., distributor for All-State alloys and fluxes, and redesigned the windows substituting brazing for the mechanical joints. The operation is performed with No. 31 sheet aluminum brazing rod and No. 31 Brazaloy flux with the rod applied at 1050°F.

Brazing work is done by girls with no previous experience at either brazing or welding. The joints turned out not only have the neat appearance that customers want but are as strong as the base metal. Technique is to: Jig the frame parts in place after the braze area is cleaned and degreased (edges do not require beveling); paint wetted flux along the joint; apply heat until flux becomes liquid; and melt off sufficient rod to flow along the joint. After brazing, the windows are cleaned by a 5 minute bath in engraver's nitric acid solution, washed clean in water and sprayed with a clear lacquer.

## '1952 Economy in Production'

Tocco Division, Ohio Crankshaft Co., Cleveland, is sponsoring a second contest aimed at uncovering some of the best methods of production economy through use of the division's induction heating equipment. Entrants must describe Tocco installations not reported in previous articles and include photographs or sketches of fixtures and parts named in their studies of increased production—decreased cost.

Rules say contestants should submit at least 250 words on application of equipment for hardening, brazing, soldering, heat treating, annealing, forging or melting. Entries will be received until June 1, 1952, when editors and publishers representing 12 leading business publications will act as judges. First prize will be \$1000; second, \$700; third, \$500; fourth, \$400; fifth, \$100; and sixth through tenth, \$50 each.



Castered skids make loading and unloading by fork truck an easy matter. Since the plant has no docks, these functions must be done from ground level. Loads are placed in the trailer and pushed into position

# RAPID REVERSAL TECHNIQUE

## *Applicable for Rolling Mills*

ALTHOUGH it is relatively easy to stop an electric motor quickly by the use of electrical or mechanical brakes, rapid starts in either the same or the reverse direction are limited by the low torque that can be obtained by electromagnetic means alone. However, small electric motors may be reversed in 3 to 4 milliseconds using a method developed at the National Bureau of Standards.

In the rapid reversal motor the kinetic energy of the rotor, instead of being dissipated as heat in a brake during deceleration, is converted into potential energy in a spring or other stored energy device, and then is used to accelerate the rotor rapidly in the opposite direction. Although the technique was designed specifically to meet the need for high-speed reversal of magnetic tapes in electronic digital computing machine memories, Harold Hessing, mechanical metallurgy section, National Bureau of Standards, made the interesting suggestion that the technique be applied to the reversing of rolling mills. Measurements on the 2-high 16 x 24-inch reversing mill used at this bureau, show that approximately 3 seconds are needed for stopping the motor, using an eddy-current dissipator brake, and approximately 12 seconds are needed to bring the motor and mill combination up through the normal sequence of starting to operating speed. Preliminary calculations indicate that a mill of this size could be stopped and reversed in approximately 1/5 of a second, using a pneumatic accumulator for a stored energy device.

It appears possible that the utilization of such a high-speed reversing device could greatly increase the

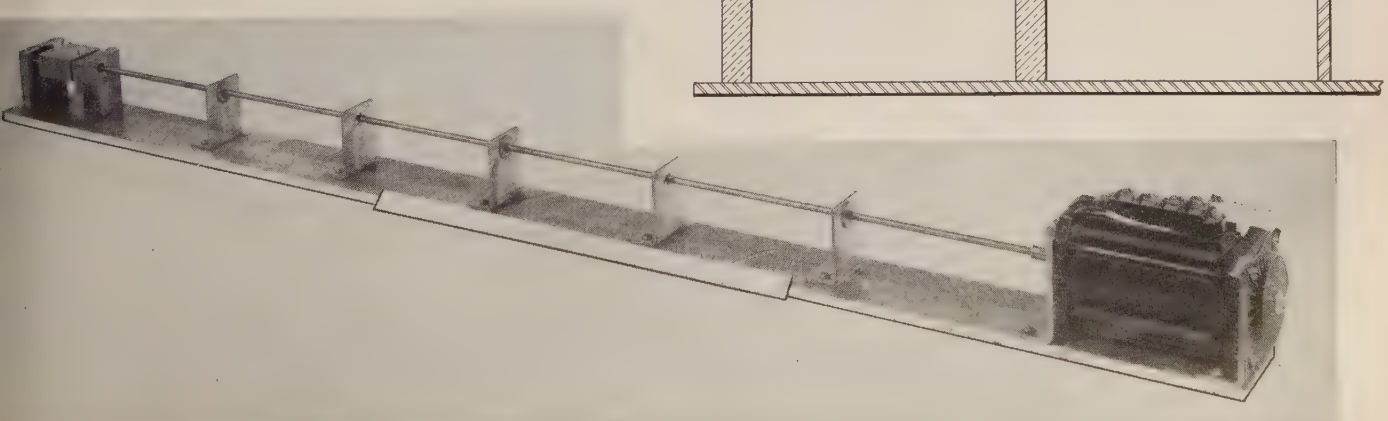
production from a 2-high mill, and might permit the use of 2-high mills for work which now requires a 3-high mill. It is realized that in order to utilize so rapid a reversal other problems would have to be solved such as: Automatic devices for starting, operating and stopping screwdowns, high-speed billet-handling equipment, etc.

The small low-inertia electric motor as modified at the National Bureau of Standards for quick reversals of 3 to 4 milliseconds is shown in Fig. 1. With the motor operating in either direction, the second of the two positive unidirectional clutches at the left end of the steel torsion bar is engaged, thus stopping the rotation of the adjacent end of the bar. The kinetic energy of the motor is converted into potential energy in the torsion bar by additional rotation of the motor, and used to accelerate the motor rapidly in the opposite direction.

A schematic diagram showing the operational details of the two positive unidirectional clutches used in first National Bureau of Standards rapid-reversal motor is shown in Fig. 2. Positioned at one end of the torsion bar opposite that rigidly connected to the motor, one clutch prevents clockwise, and the other counterclockwise rotation. For example, when the shaft is rotating in a counterclockwise direction (observer at the right), the clutch housing is forced quickly to the right engaging the stationary clutch, left, and the rotating member (center of clutch housing). The kinetic energy of the rotor is thus converted into potential energy in the torsion shaft, which is then used to accelerate the rotor rapidly in

Fig. 1 (below)—Small low-inertia electric motor for quick reversals

Fig. 2 (right)—Schematic diagram of two positive unidirectional clutches



a clockwise direction, automatically disengaging the clutch. To again reverse the direction of rotation, the housing is moved in a similar manner to the left, engaging the other clutch.

A description of the original high-speed reversal of an electric motor will be found in the Technical News Bulletin, National Bureau of Standards, May 1950, page 63, from which the illustrations were obtained.

## Tool Steels for Varied Applications

*(Concluded from page 89)*

for cutting tools, the field is almost entirely taken up with high-speed steel as far as wrought products are concerned. There are many variations of high-speed steel starting with the familiar 0.70 per cent carbon, 18.00 per cent tungsten, 4.00 per cent chromium, and 1.00 per cent vanadium. Relatively high cobalt contents are used in some of these grades to increase their cutting efficiency on heavy cuts, and new high-speed steels have appeared within the last five to six years containing relatively large amounts of carbon and vanadium which are reported to improve cutting life under severe lathe turning conditions. This latter development is brought about because of the encroachment of carbide tools for cutting applications. Between the normal high-speed steel which is obtainable in wrought products and the carbide tools which are obtainable only in cast or powdered metallurgical forms, there is a vast field for high-speed steels showing a cutting efficiency between the standard grades of high-speed steels and the cast carbide grades. This field is still in a state of flux and development.

**Extrusion Steels** — The extrusion industry has a number of highly specialized hot work steels for extrusion dies, dummy blocks and containers. For our purpose of discussion, the steels shown in Fig. 2 as hot work steels could be representative of most applications, except that a 0.50 per cent carbon, 18.00 per cent tungsten, 4.00 per cent chromium, 1.00 per cent vanadium high speed steel is sometimes used in extrusion dies. Another steel which is finding some favor as a container steel contains 0.35 per cent carbon, 4.00 per cent molybdenum and 3.50 per cent chromium.

The cold heading industry requires straight carbon steels of closely controlled hardenability for upsetting and heading dies. The carbon is either 0.90 per cent or 1.00 per cent, with or without 0.25 per cent vanadium. Otherwise their needs are taken care of by Fig. 2. The same remarks apply to the pneumatic tool industry.

**Plastic Mold Steels**—Plastic mold steels are generally considered as tool or die steels at the present time. This is a relatively new industry and here considerable development work has been done in finding suitable steels for cold hubbing applications. After the die impression has been hubbed, the steel is generally carburized and then heat treated to develop a hard case. The making of a plastic mold die is an expensive process, whether machined or hubbed, and it is necessary to use steel of the highest quality to obtain almost perfect cavities and consequently defect-free plastic parts. The most common hubbing

grade is a pure form of iron which must be made to tool steel standards because of the necessity for cleanliness, soundness of the bars and freedom from porosity and segregation.

The next grade of plastic die and mold steel is an oil hardening steel containing low carbon with about 2.50 per cent chromium. This die steel will show less size change after carburizing and hardening than the hubbing iron because of its oil quenching properties. Finally, for applications which require the dies to work at about 500°F under fairly abrasive conditions we have developed a hubbing steel which contains low carbon, about 5.00 per cent chromium, and about 1.00 per cent molybdenum. This steel can be annealed soft for hubbing purposes and is obtained to tool steel standards. It can be carburized and then air hardened or oil quenched depending upon the application. It will show the least size change compared to either the oil or water hardening steel previously mentioned. These three die steels can be matched together to obtain a matched set of plastic mold die steels having the properties shown in Fig. 3.

**Die Cast Steel**—The die casting industry is well standardized on the 0.35 per cent carbon, 5.00 per cent chromium, 1.50 per cent molybdenum hot work steel shown in Fig. 2 for molds in die casting of aluminum. The 0.35 per cent carbon, 8.00 per cent tungsten, 3.50 per cent chrome hot work steel is used for die casting brass, but this is far from a satisfactory mold steel for this application. For other parts of the die casting machines and tools the steels shown in Fig. 2 suffice.

## Stockpiled Flue Dust Returned



RESERVE supply of flue dust containing about 40 per cent iron ore and stockpiled near Wisconsin Steel Co.'s Chicago mill is used to keep the flue dust recovery program going in times of abnormal operating conditions. Recovery facilities are set up to take care of dust collected from the company's three furnaces but when one of them is down for rebuilding or repairs the company hires Industrial Cinder Co. to haul flue dust from the stockpile back to the plant. Handling equipment used by the contractor includes an International TD-14A crawler with a 2-yard bucket loader and four International trucks

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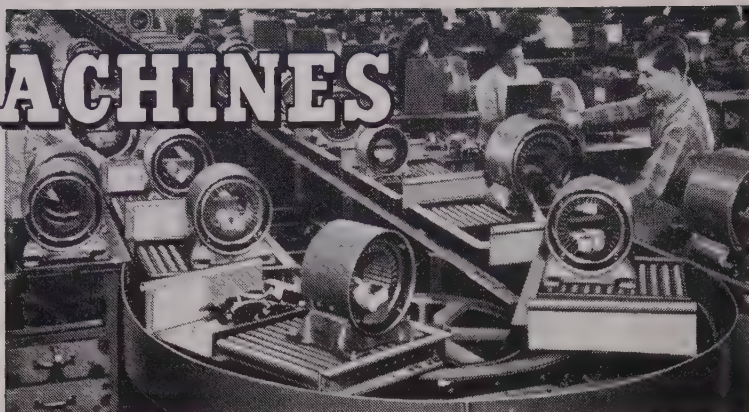
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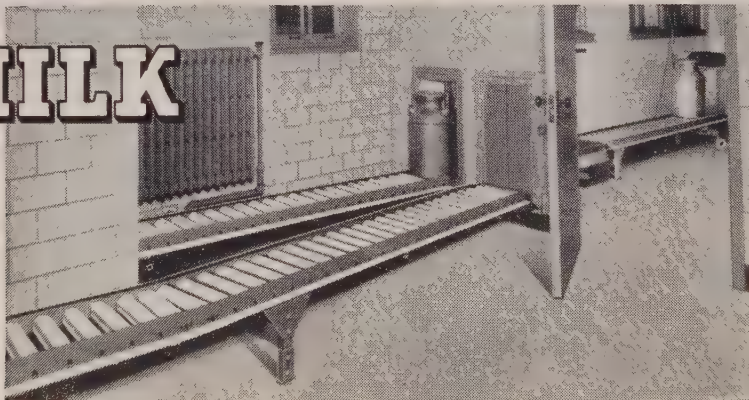
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## Efficient Handling Pares Costs

Manufacturers of valves, pipe fittings and similar products will find valuable information on the savings that efficient materials handling methods make possible, described in a new certified job study prepared by Towmotor Corp. The study shows how the Columbia Malleable Castings Corp. Division, Grinnell Co. Inc., Columbia, Pa., cut overall handling costs by 60 per cent. On-the-job photos reveal how modern handling methods speeded up production and cut handling costs in each department of the Columbia plant. In the annealing department, for example, a 20 per cent saving in floor space was made, and a 50 per cent saving in man-hours, plus a 25 per cent speedup in handling, were effected in pouring castings into annealing pots.

In the shipping department, a 30 per cent increase in fittings handled per man was made possible. A 20 per cent better use of storage floor space was made in the blank storage department. Savings made in the shearing and straightening department, union machining department and hanger assembly department also are described in the job study.

Copies of certified job study NY 108, illustrated with action photos, are available on request to Towmotor Corp., 1226 E. 152nd St., Cleveland 10.

## Copper-Bearing Stainless Data

In recent years a considerable number of copper-bearing stainless steel alloys have been developed and are now being commercially produced. Many of these special stainless steels are now extensively used in many applications which require alloys with high corrosion resistance or alloys exhibiting age-hardening properties. A bulletin prepared by Welding Research Council discusses in detail the physical, metallurgical, and welding properties of many experimental and commercial copper-bearing stainless steels containing up to 30 per cent chromium and between 0 and 35 per cent nickel. The copper additions in most of the discussed alloys usually varied between 1 and 5 per cent.

Among the topics covered are the phase relations, hot-working properties, corrosion resistance, age-hardening characteristics, effects of alloying elements such as Mn, Si, Mo, Cr, Ti, W, Be, V, stress-corrosion cracking, heat treatments, mechanical properties and weldability. In addition, detailed tables are given in which the various American and foreign patented and commercial alloys are listed. The report represents

compendium of 166 references representing published articles as well as many unpublished contributions received from various research investigators in the United States and abroad.

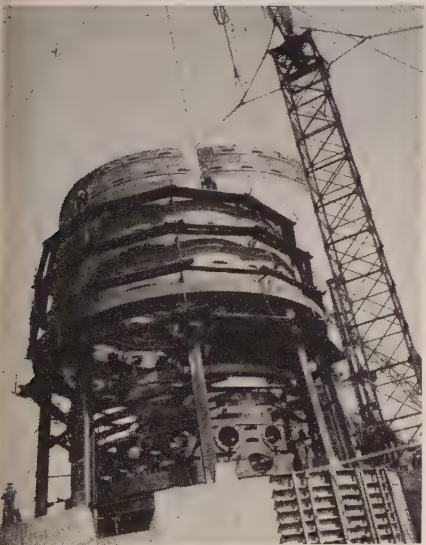
Copies at \$1 each may be obtained from Welding Research Council, 29 W. 39th St., New York 18.

**Up-to-Date Gage Standard**

Revised edition of "American Standard for Screw Thread Gages and Gaging" has been approved by American Standards Association, New York. This edition brings methods up to date for checking threaded products to see if they comply with the requirements for unified and American screw threads for screws, bolts, nuts and other threaded parts. The unified threads were approved in 1949 by Great Britain, Canada, and the U. S.

Included in the standard are tables for W and X tolerances on lead, half angle of thread; major, minor, and pitch diameter; and wear allowances on pitch diameter, for go, hi and lo thread gages. It also shows Z tolerances for plain plug gages for checking minor diameter of internal and major diameter of external threads. The terms "hi gage" and

**Iron Making Capacity Rises**



**STEELMAKING** capacity expansion at Republic Steel Corp.'s Cleveland works includes this 1470-ton per day blast furnace scheduled for completion in January. After placement each 7-foot section in the 140-foot high furnace is welded. Holes below are for tuyere pipes through which air heated to 1250° F will be blown at speeds up to 350 miles per hour through the furnace. Hearth diameter of the furnace is 28 feet

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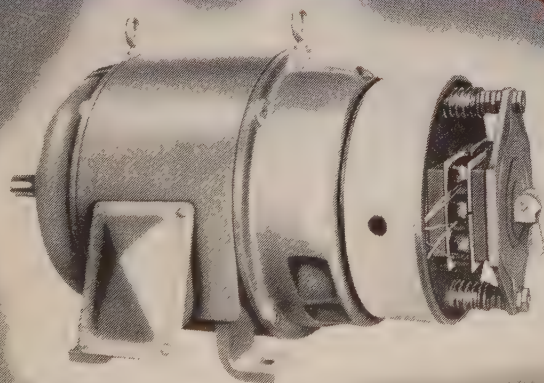
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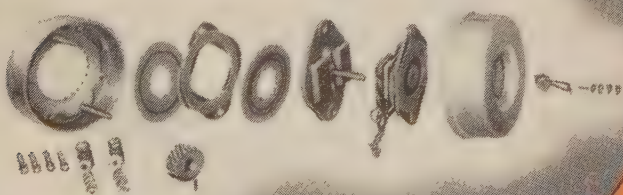
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Above: Shown with cover removed. Note how adjustment can be made with complete safety.

Below: The entire unit, disassembled. Few parts, simplicity keep maintenance negligible, assure long life.



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### FEATURES AND ADVANTAGES

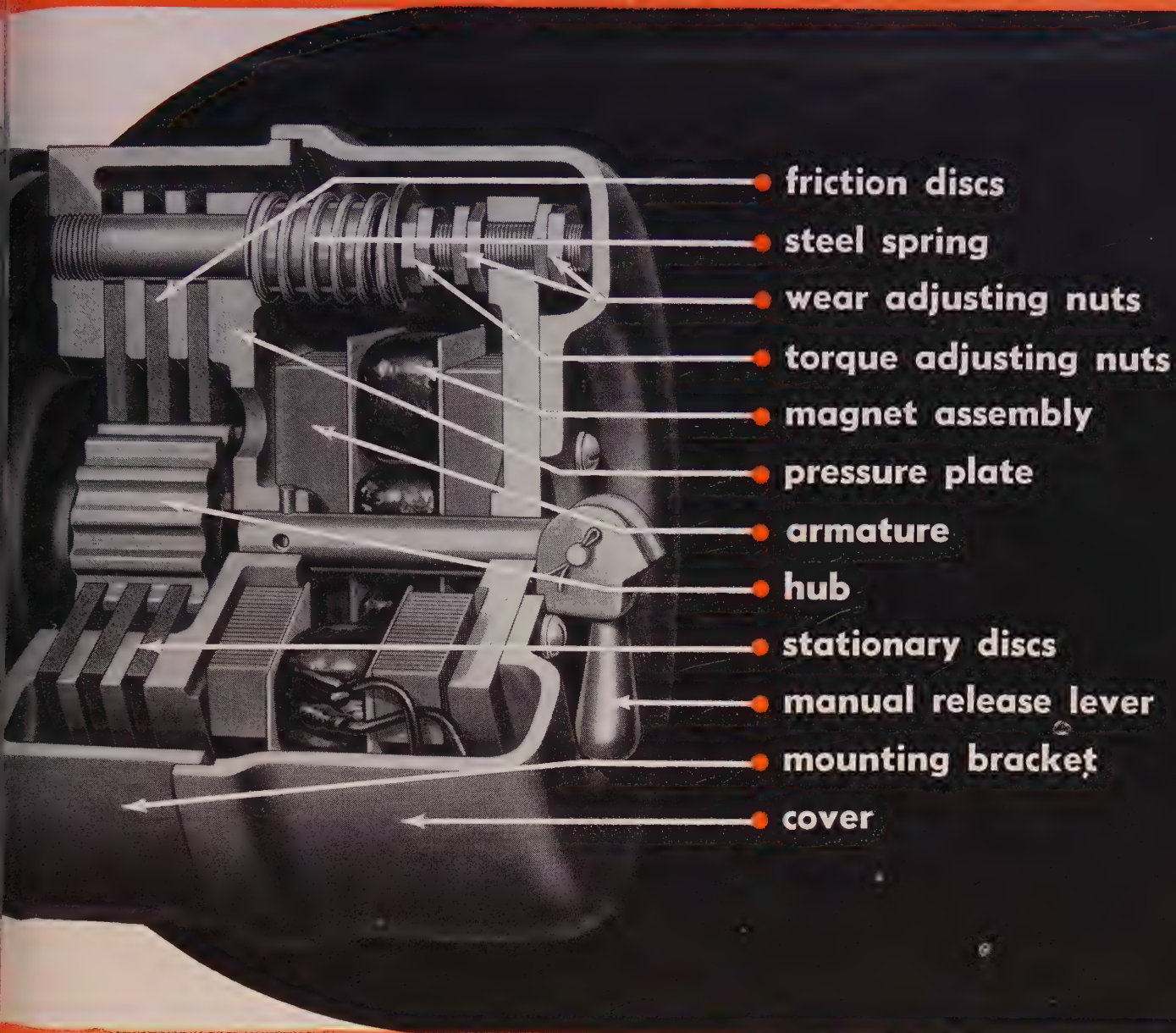
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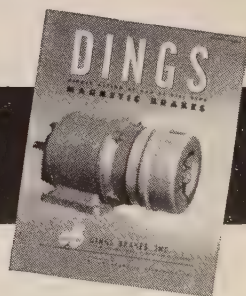
made by a twist of the wrench on a set of double lock nuts. Visual inspection of position of manual release lever is all that is needed to check for wear.

**MANUAL RELEASE.** A manual release lever, located outside the housing, is standard. Use of lever enables operator to disengage brake, allows shaft free rotation when desired. This mechanism automatically resets itself, restores unit to usual operating condition when power is again applied.

**SAFETY FEATURES:** In adjusting, it is impossible for operator to increase torque beyond ability of magnet to release. In addition, the shell of the housing shrouds the rotating discs, enabling the operator to make inspection and adjustment with complete safety while unit is in operation.

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## Generator Hits 60,000 kw

One of the largest single-shaft turbo-generators ever built for industrial power production is in operation at U. S. Steel Co.'s South Works, S. Chicago, Ill. Housed in a new ten-story addition to No. 5 power station, the generator is a principal installation in the plant's multi-million dollar improvement program.

Steam is provided by boiler with capacity of 650,000 pounds an hour.

Operating at 900 pounds, 900° F at the superheater outlet and equipped with water-cooled walls, this boiler is the largest ever installed to utilize blast furnace gas. Formerly the plant's excess was bled to the atmosphere. The 60-cycle, 3-phase turbo-generator has a power factor of 0.85 and generates 60,000 kw at 13,800 v. It has a direct-connected exciter and a hydrogen cooling system. When operating at capacity, the generator produces enough electric power to service a community of 150,000 people.

Power generated at 13,800 v is

transmitted to the company's Gary district plants. An underground duct system transmits current to a 77,000-kva transformer in the outdoor substation where voltage is stepped up to 69,000 v for transmission over two existing overhead circuits. These lines are controlled by selective pole-reclosing circuit breakers. A carrier current system is provided for relaying, telephone communication, and telemetering.

## Facts for Caustic Soda Users

Pennsylvania Salt Mfg. Co., Philadelphia, has issued a caustic soda bulletin. Divided into four sections under tabled headings, the booklet provides handy reference for particular problems on purchasing, handling and storage, equipment design and technical data. The comparison of various forms of caustic soda and the evaluation of shipping and ordering points are helpful in selecting the form of this chemical most economical for use at various plants.

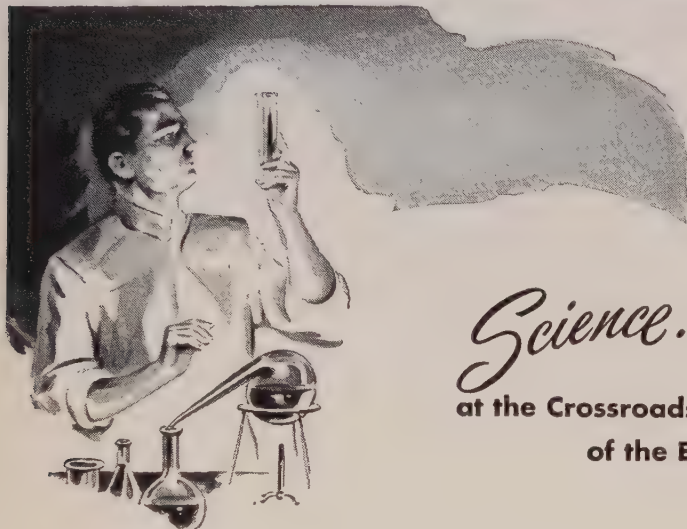
The section on equipment design deals with the problems of engineering, construction and maintenance personnel. Charts and tables showing freezing point, specific gravity at various temperatures, NaOH content and density and other properties of caustic soda will give technicians and chemists readily-available answers to their particular questions.

A separate leaflet covering instructions for safe handling of caustic soda tank cars is inserted in the flyleaf of the main bulletin. Detailed instructions for steaming and unloading 50 and 72 per cent caustic soda, general information and personal precautions are included. Requests for the bulletin and leaflet should be written on company letterhead and addressed to Pennsalt Chemicals, 1000 Widener Bldg., Philadelphia 7, Pa.

## Steel Stabilized Quickly

Complete dimensional stabilization of steel, ordinarily requiring years of seasoning, is now being effected in a matter of hours chilling to -120°F. in subzero industrial chilling machines, manufactured by Sub-Zero Products Division, Deepfreeze Distributing Corp., Cincinnati.

In ordinary heating and quenching of steel not all the austenite is transformed to martensite. This unchanged portion causes dimensional growth and warp over a period of time. However, it has been found that repeated cycles of heating to room temperature and chilling to minus 120° F. bring about 100 per cent transformation of austenite to martensite. As a result of this change complete stabilization is obtained. At the same time

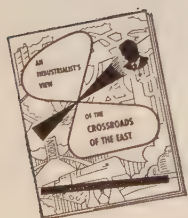


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greater hardness, strength and ductility is obtained according to the manufacturer's reports.

This application of subzero chilling is found effective on any steel part where dimensional stability is important. One valuable application is in the seasoning, setting and counter-annealing of gages. After subzero cycling, the gages hold their finished size under all normal temperature changes and handling. One instance cited by the manufacturer is the lapping plates and surface plates used in gage manufacturing. After subzeroing, these plates retain their accuracy for two to three days, whereas formerly it was necessary to resurface them every two to three hours.

## Production Will Quadruple

A specialty metal, Electroschild, introduced in 1950 by American Clad-metals Co. to shield electronic communication equipment from outside interferences, will be produced in 1952 at a rate four times present production, says Joseph Kinney Jr., president. It uses less copper than shields previously employed and weight for weight is much stronger, having a core of steel clad on each side with copper.

Steel and copper used in the specialty metal are bonded together permanently by means of the Kinney process, which is owned by the company. Metal is made in light and heavy sheets up to about 35 square heavy sheets up to about 35 sq ft in area. It is readily workable and easy to weld or solder.

## Steel Cleaning Data Available

Oakite Products Inc., announces publication of a 28-page illustrated booklet, "Four Good Steps Toward Better Electroplating on Steel," giving specific recommendations for effecting improvements in the average cycle for cleaning steel before electroplating.

Booklet lists in detail the benefits to be gained by: 1. Precleaning more thoroughly—because the electrocleaning tank operates more economically and more effectively when the heavy oils and greases are removed by pre-cleaning; 2. rinsing more thoroughly—because inadequate rinsing is the recognized cause of a large portion of plating difficulties; 3. using reverse current cleaning for all electrocleaning of steel—because it does a more thorough job of removing a variety of films that are unfavorable to the adhesion of electrodeposited metals; and 4. using an efficient electrocleaner that provides high conductivity, superior smut removal, long



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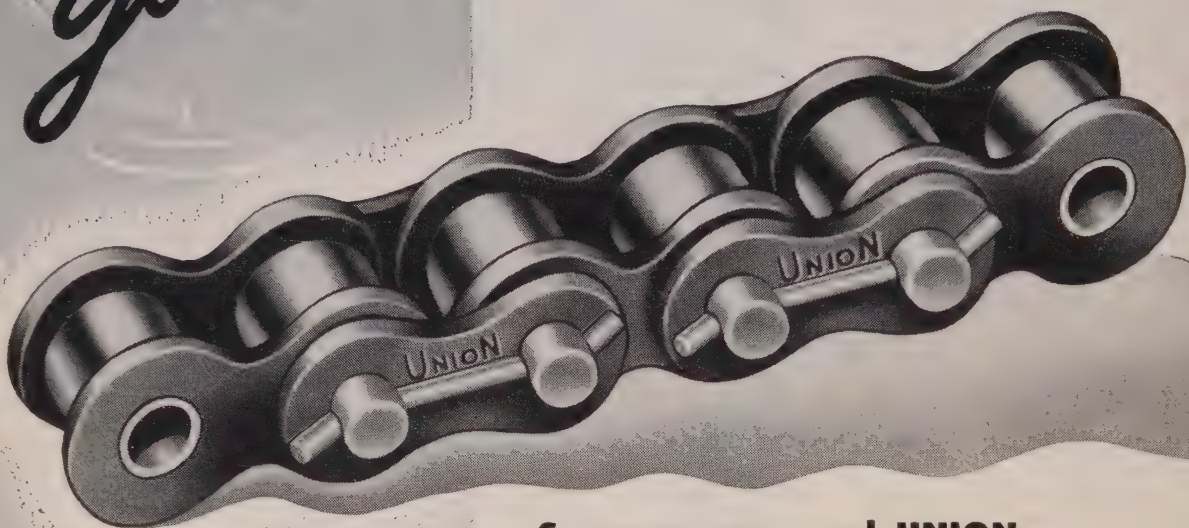
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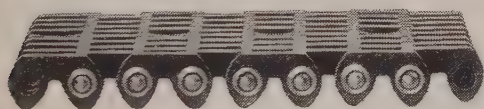
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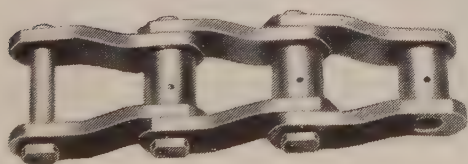
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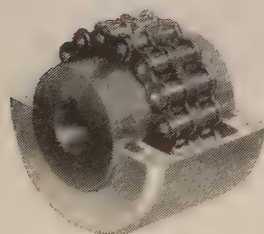
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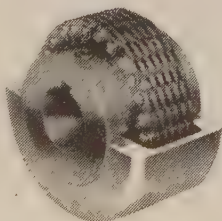


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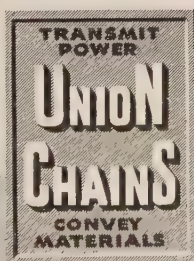
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solution life and other advantages.

Also of interest to platers are the answers presented in the booklet to such questions as: How can cleaning costs be reduced 33 per cent while plating quality is being improved? What are four easy ways to improve the average rinse tank? What rinsing fault invites trouble in the plating of high-carbon steel? How can an ordinary electrocleaning cycle be transformed into an exceptionally good cycle? Copies of this booklet may be secured from Oakite Products Inc., 134E Thames St., New York 6.

### Atomic Patents Available

Descriptions of 25 patents owned by the U. S. Government and held by the Atomic Energy Commission have been transmitted to the U. S. Patent Office for registry and listing in the official register of patents. The commission will grant nonexclusive, royalty-free licenses on the listed patents, as part of its program to make nonsecret technological information available for use by industry. Commission-held patents and patent applications released for licensing now total 342.

Applicants for licenses should apply to the Chief, Patent Branch, Office of the General Counsel, U. S. Atomic Energy Commission, Washington 25, D. C., identifying the subject matter by patent number and title. Copies of these patents may be obtained from the U. S. Patent Office.

### Slide Chart for Heat Treaters

To put authoritative heat treating data into the hands of tool and die-makers and heat treaters, Carpenter Steel Co., Reading, Pa., has prepared a compact heat treating slide chart. Measuring 5 x 11 inches, the chart is convenient to use yet gives complete answers to items such as heating speed, furnace atmosphere, drawing temperature and time for drawing.

It contains data on type analyses of the more popular types of die steels, forging heat, annealing treatment and hardening treatment. Also included are facts on quenching, effect of drawing temperature on hardness, and others.

### Lacquer Specifications Given


Egyptian Lacquer Mfg. Co. in an effort to be of service to product manufacturers and commercial finishers has published a booklet listing practically all U. S. Government specification finishes issued to date of printing. Booklet lists the speci-

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**THE ONLY PLANT IN EASTERN U. S.**

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**PICKLING coils:**  
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**SHEETS & PLATE:** Any width, any length, any thickness.

**CAPACITY:** 25,000 tons/month.

**Prompt Quality Service**

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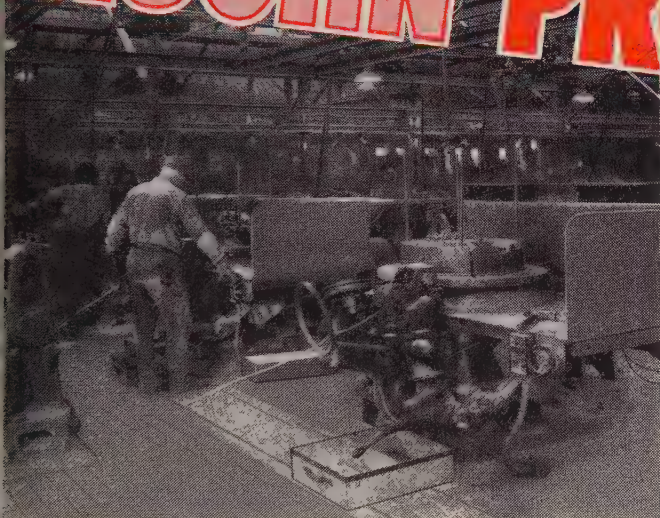
**OFFICE:** 822 FRICK BUILDING, PITTSBURGH 22, PA. **PLANT:** McKees Rocks, PA.

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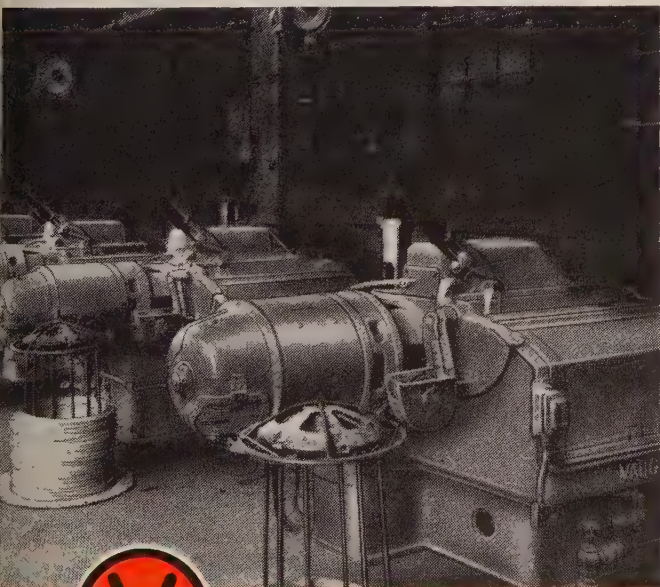
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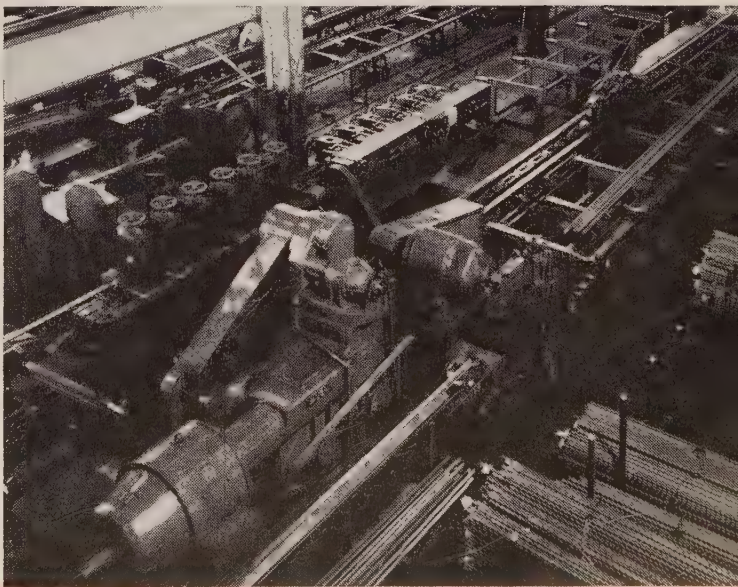
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fication code number, gives complete ingredient detail and shows drying periods required between applications.

As new specifications are released the company will make supplements available. When requesting a copy of this booklet please use your company letterhead and state title or connection. Address requests to Egyptian Lacquer Mfg. Co., Box 444, Newark 1, N. J.

### Switch Facts for Designers

A 12-page folder describing in detail the Rotary Packet switches man-

ufactured by Arrow-Hart & Hegeman Electric Co. is offered without charge to design engineers and others interested in this product. The folder shows in detail the many combinations available and provides engineering data, ratings, dimensions and mounting types.

The switches are made for controlling electrical circuits operating at current ratings of 10, 25, 30, 60, 100, 200 and 500 amperes and voltage ratings from 115 to 600 v ac and up to 250 v dc. For special applications that may not be covered in this folder, Arrow-Hart & Hegeman has provided

a form which outlines the type of information required to enable the manufacturer's engineers to recommend and fabricate switches of unusual design. Copies of the folder are available on request from the Appliance Control Division, The Arrow-Hart & Hegeman Electric Co., Hartford 6, Conn.

### Quality Castings Described

A new 48-page book entitled "Hamilton Quality Castings" was recently published by Hamilton Foundry & Machine Co., Hamilton, O. The company states its aims in publishing the book are to: Provide castings users with a book that will be helpful to them by contributing to their understanding of iron castings and the importance of quality in their selection; and present to the industry a new and unusual addition to casting literature.

Dozens of typical castings and a few unusual castings made up specially for customers are illustrated.

### Betatron Checks Equipment

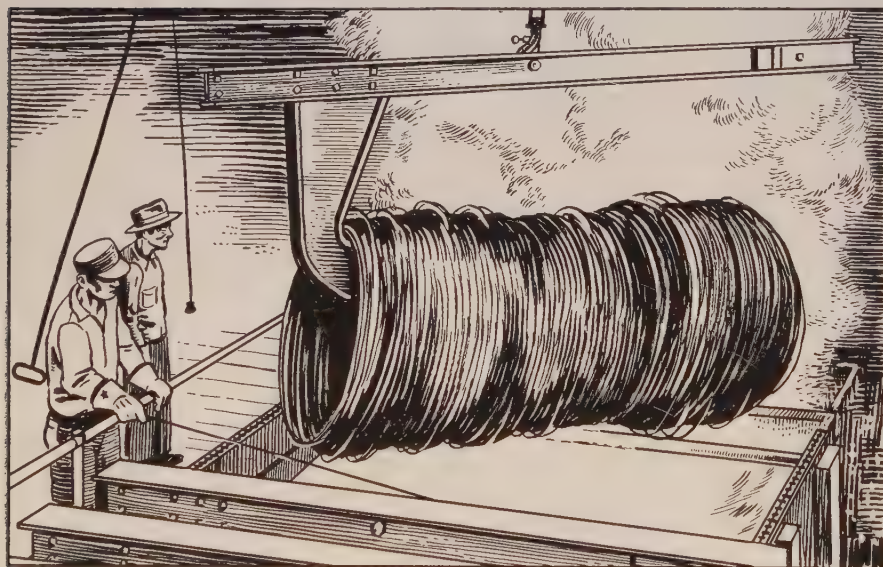


PRODUCTION LINE inspection of heavy ordnance equipment is being performed by an Allis-Chalmers motorized industrial betatron at Continental Foundry & Machine Co.'s East Chicago, Ind., plant. Located in the same area originally occupied by a 1 million volt x-ray machine which was too slow for production inspection of large pieces, the 20-million volt betatron has greater flexibility and five times the penetrating power of the old machine. It is capable of detecting flaws as small as 0.02-inch in castings, forgings and weldments from 1 to 24 inches thick. Areas from 6 inches long to sections over 20 feet in length can be examined

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**FOR BETTER PICKLING  
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more, radiography often suggests changes in casting methods which increase the yield in production runs.

Get in touch with an x-ray dealer. Ask him to give you more details on how Radiography can better your foundry operations and increase production. Send for a free copy of "Radiography as a Foundry Tool."

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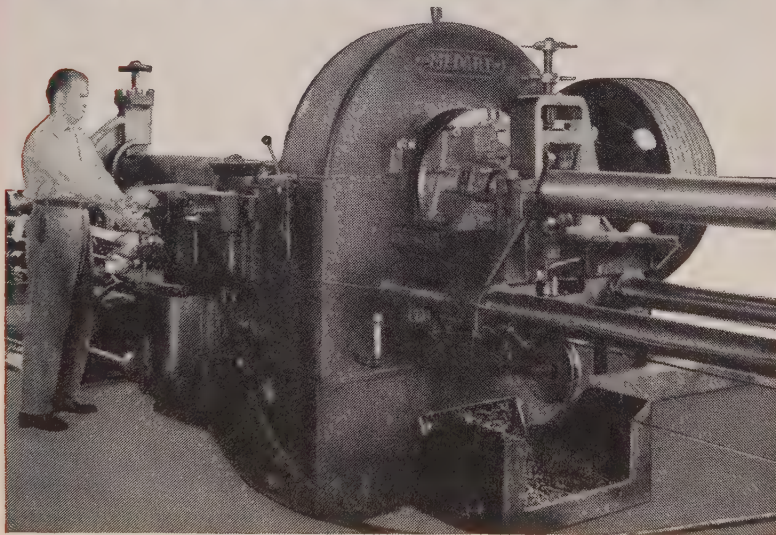
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... for bars and tubes from  
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- For high production superior finish, close-tolerance turning or rough peeling. Workpiece size and throughput speeds are limited only by capacity of cutting tools.
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- Fully automatic push button control from central operating station.

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## CALENDAR OF MEETINGS

† Denotes first listing in this column.

**November 11-14, American Supply & Machinery Manufacturers Association:** Mid-Year meeting, The Homestead, Hot Springs, Va. Association address: 731-732 DuPont Circle Bldg., Washington. General manager: J. Kennedy Hanson.

**November 12-15, National Automatic Merchandising Association:** Convention & exhibiting Public Auditorium, Cleveland. Association address: 7 S. Dearborn St., Chicago 3. Executive director: Clinton S. Darling.

**November 12-16, National Electric Manufacturers Association:** Annual fall meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Association address: 155 E. 44th St., New York 17. Managing director: W. J. Donahue.

**November 14-15, Industrial Hygiene Foundation:** Annual meeting, Mellon Institute, Pittsburgh. Foundation address: 4400 Fifth Avenue, Pittsburgh 13. Managing director: John J. MacMahon.

**November 14-16, National Metal Trades Association:** Annual convention, Palmer House, Chicago. Association address: 122 S. Michigan Ave., Chicago 3. Secretary: Charles J. Blatchford.

**November 15-16, The Magnesium Association:** Annual meeting, Biltmore Hotel, New York. Association address: 122 E. 42nd St., New York 17. Assistant secretary: Martha Hanson.

**November 15-16, American Zinc Institute:** Fall meeting, The Galvanizers Committee, St. Francis Hotel, Canton, O. Institute address: 60 E. 42nd St., New York 17. Secretary: E. V. Gent.

**†November 15-16, American Society for Quality Control:** Midwest quality control conference and exhibit, Hotel Sherman, Chicago. Conference address: 1 N. LaSalle St., Chicago 2. Conference secretary: W. Collins.

**November 15-16, American Council of Commercial Laboratories:** Annual meeting, Baker Hotel, Dallas. Council address: 4302 East West Highway, Washington 14. Executive secretary: H. M. Dudley.

**November 16, Association of American Road & Builders:** Fall conference, Blackstone Hotel, Chicago. Association address: Transportation Bldg., Washington 6. Secretary: Treasurer: G. M. Campbell.

**November 26-December 1, Chemical Industry Exposition:** Grand Central Palace, New York. Manager: Charles F. Roth, International Exposition Co., New York; chairman: E. Weidlein, Mellon Institute.

**November 28-30, Scientific Apparatus Makers Association:** Mid-year meeting, Industrial optical, aeronautical and military instrument sections, Hotel New Yorker, New York. Association address: 20 N. Wacker Drive, Chicago 6. Secretary: Kenneth Anderson.

**†November 28-30, Society for Experimental Stress Analysis:** Annual fall meeting, Bellevue-Stratford Hotel, Philadelphia. Society address: Box 168, Central Sq. Station, Cambridge 39, Mass. Secretary: Professor W. Murray.

**November 29, American Iron and Steel Institute:** Regional technical meeting, Hotel Cleveland, Cleveland. Institute address: 350 Fifth Ave., New York. President: Walter S. Tower.

**November 29-30, Annual Pittsburgh Diffraction Conference:** Mellon Institute, Pittsburgh. Preliminary program information: C. Cline, Aluminum Research Laboratories, New Kensington, Pa.

**December 5, Steel Kitchen Cabinet Manufacturers Association:** First annual meeting, Hotel Cleveland, Cleveland. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

**December 6-8, American Institute of Mining & Metallurgical Engineers:** Electric furnace steel conference, William Penn Hotel, Pittsburgh. Institute address: 29 W. 39th St., New York 18. Secretary: Edward H. Roberts.

# New Products and Equipment

## Grinder Holds Blade Vertically

USE REPLY CARD—CIRCLE No. 1

Efficient grinding on external surfaces of aircraft propellor blade hubs, including ball race ways, is done with a grinder developed by Norton Co., Worcester 6, Mass. Accurate and rapid grinding is performed with the blade held in a vertical position by a workholding fixture on an antifriction bearing work spindle. Vertical method cuts down errors brought about by deflection when the blade is held horizontally. Wheel spindle is also of antifriction bearing construction, mounted vertically. Power positioning of the work spindle for ball race grinding operations and power feed of the grinding wheel simplify operation.

## 85 Transmission Cases per Hour

USE REPLY CARD—CIRCLE No. 2

Combination four-way, horizontal and angular machine developed by National Automatic Tool Co., Richmond, Ind., works 85 transmission cases per hour. In each case, unit drills 10 holes, chamfers 4 holes, combination reams and spot faces 1 hole, reams 1 hole, combination reams and spot faces 2 bosses and taps 8 holes. It consists of a horizontal floor type fixture arranged with fixed center gear driven heads and provided with auxiliary reversing drive tapping units. Heads contain 17 drilling spindles mounted in antifriction bearings.

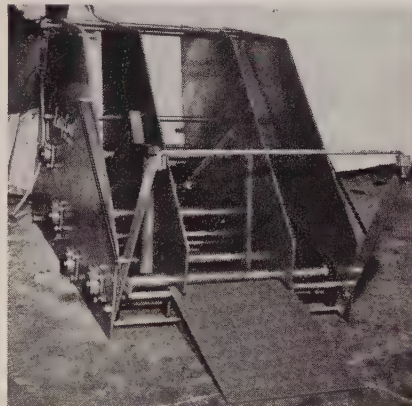
One single-spindle reversing motor-driven tapping unit is angularly mounted and arranged with hydraulic traverse. One of the company's angularly mounted holeunits, equipped with a single-spindle drill head com-

pletes the machine. Other features are hydraulic feed and automatic index for the trunnion fixture. One left hand horizontal unit and the angular holeunit have automatic time-delayed reverse and positive stop.

## Automatic Coil Stock Cradle

USE REPLY CARD—CIRCLE No. 3

Added weight and width of coils handled are possible on a 3000-pound capacity cradle available from the standard line of motor driven, automatic coil stock cradles made by Rowe Machinery & Mfg. Co. Inc., 1506 N. Industrial Blvd., Dallas, Tex. The 3000 series takes stock with maximum 48-inch OD and maximum width



... handles stock to 3000 pounds

of 15 inches as standard. Variations in width requirements may be had on quotation within weight capacity of cradle.

Actuating arm operates on the inside or outside of slack loop, its top bar swinging completely out of the way for loading. Securing bands may be left on coil and removed as coil

## REPLY CARDS

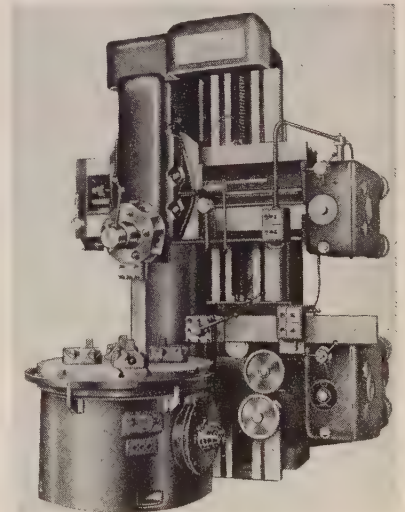
on page 139 will bring you more information on any new products and equipment in this section.

is revolved gradually by snapping toggle switch. Hardened and ground rolls are mounted in each of the two individually controlled guide plates. Reversing switch is standard equipment; variable pitch sheave is optional.

## Vertical Mills in Four Sizes

USE REPLY CARD—CIRCLE No. 4

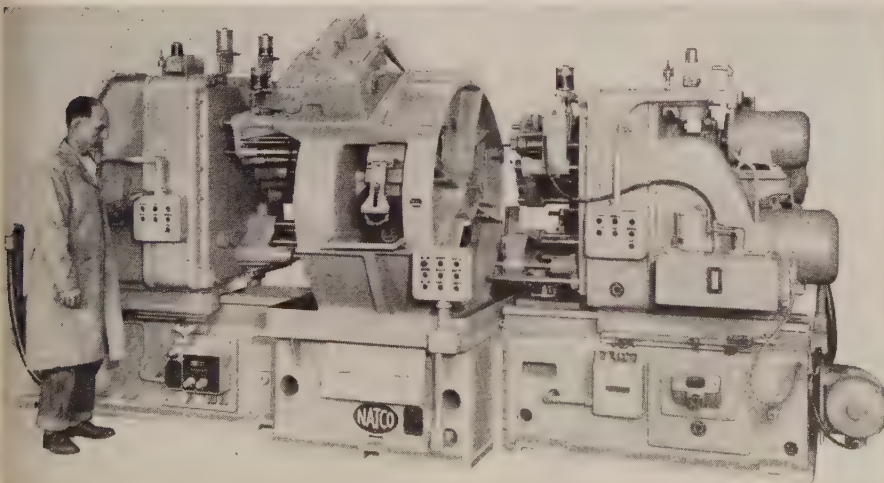
Cosa Corp., 405 Lexington Ave., New York 17, N. Y., is introducing in the United States the Froriep single column vertical boring and turning mill. Machine's column and wide base



... single lever controls feeds and return

are bolted rigidly and ribbed heavily for quiet machining, under heaviest loads. Cross rail slide head and side arm head are completely independent, each controlled by an individual set of feed and rapid return gears. Three levers, placed centrally, control geometrically graduated feeds for the tool's vertical and horizontal travel.

Engaging of all feeds and rapid return is effected by single lever control. Fine head adjustment is located on the slide to permit close observation of cutting edge with even



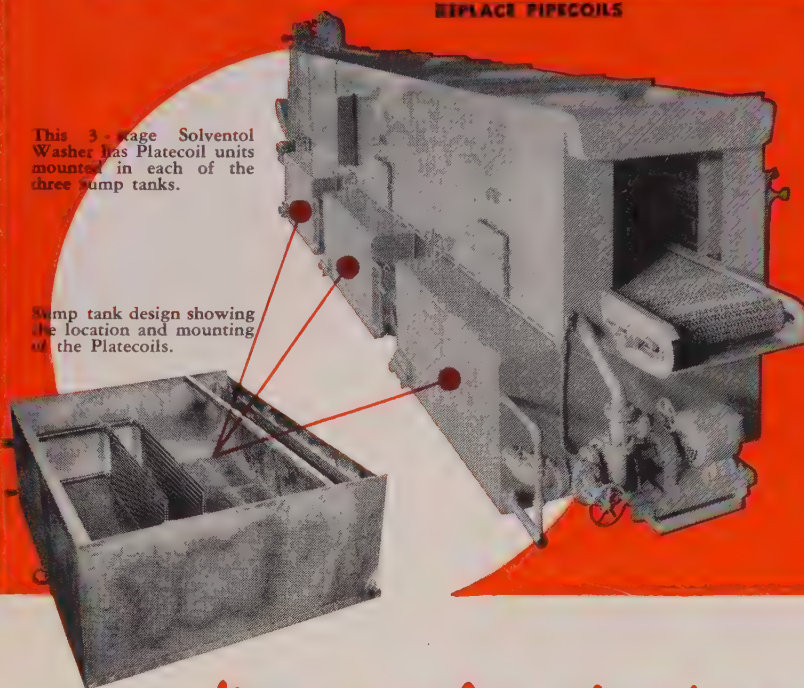
... heads contain 17 drilling spindles mounted in antifriction bearings

# Now! SOLVENTOL CHEMICAL IS SAVING MONEY with **PLATECOILS**

REPLACE PIPECOILS

This 3-stage Solventol Washer has Platecoil units mounted in each of the three sump tanks.

Sump tank design showing the location and mounting of the Platecoils.



## ... realizes 6 major advantages

Solventol Chemical Products, Inc., Detroit, Michigan has joined the growing list of manufacturers who are saving money by using Platecoils in their products. Use of Platecoils as the heating medium in their 3-stage washer has resulted in 6 major advantages:

1. Simplified installation.
2. Sharply reduced installation costs.
3. A higher rate of heat transfer.
4. Low first cost.
5. Solution flow controlled without baffles.
6. Increased sales advantages due to easier maintenance.

The Platecoils are installed in each of the three sump tanks as shown in the inset picture. The pre-fabricated Platecoil units are installed in but a fraction of the time required for bending and installing pipe coils. That's why most manufacturers find it costs less to buy and install Platecoils than to fabricate pipe coils in their own plant.

In addition, the Platecoils are about 50% more efficient than pipe coils. As a smaller size Platecoil can be used, considerable savings in steel and more compact machine designs are possible.

If you're looking for ways to conserve steel and save money, get the facts on Platecoil today. Write for bulletin P72.

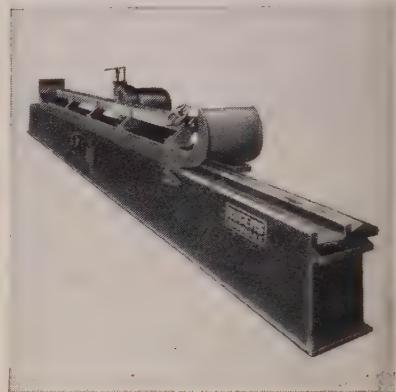


the smallest workpieces. Mill is made in four sizes with tables 39, 49, 55, and 63 inches diameter, taking workpieces weighing up to 5 tons. Machines can be furnished with thread cutting and taper turning equipment, tripping or tracing device, with electric tracer control and coolant system.

### Grinding Knives to 210 Inches

USE REPLY CARD—CIRCLE No. 5

Samuel C. Rogers & Co., 183-201 Dutton Ave., Buffalo 11, N. Y., offer a heavy-duty knife grinder, one of the 220 series, that precision grinds heavy-duty chipper knives and shear blades to 210 inches in length. The machine is also adaptable for flat



... motor speeds are 25-50 feet per minute

faces and straight edges. Its cabinet base is 30 feet long and the entire unit weighs 10½ tons. Knife bar and table travel over 5-inch V ways precision machined for smooth table action. Variable speed motor with speeds from 25 to 50 feet per minute drives the table assembly.

Knives are lined up and supported on a 10-inch wide slotted bar affixed to the knife bar by heavy-duty trunnions. Grinding head is fed automatically to the work by a heavy worm gear over machined ways. Cut is adjustable for increments from 0.0002 to 0.006-inch per cycle. Standard motor that drives the 20-inch diameter segmental grinding wheels is 15 hp, however units with larger horsepower ratings are available. Gusher type water pump delivers maximum of 45 gallons of coolant per minute to the work through a ¾-inch valve outlet.

### Guard Has Electric Control

USE REPLY CARD—CIRCLE No. 6

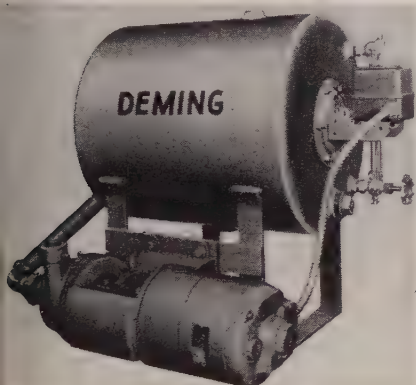
Electric-pneumatic punch press guard, model AE 60, designed for direct clutch presses having not more than 60 pounds pull and 2 inches of up and down movement on the clutch tripping rod, is offered by Tech-n-Kal Machine & Engineering, 12925 Au

burn Ave., Detroit 23, Mich. A set of electric starter buttons is installed on the press far enough apart so that operator must use one hand on each button and circuit is completed only when operator pushes simultaneously on both buttons. When air clutch is engaged, the ram makes one complete revolution in the same manner as when tripped by a foot treadle. Anti-repeat switch and long cam are standard equipment and allow the ram to descend only once unless solenoid valve is re-energized by use of the starter buttons.

### Pump Returns Condensate

USE REPLY CARD—CIRCLE No. 7

Condensation return unit that saves fuel by returning condensation from steam coils, radiators or steam operated equipment to the boiler is made by Deming Co., Salem, O. Centrifugal pump employed has enclosed bronze



... saves fuel by reclaiming process

impeller and stainless steel shaft. Deep stuffing box has conventional backing rings for grease lubrication. Pump is mounted on legs of the tank and requires no base.

Motor has standard type C mounting flange and is furnished for single phase, two or three phase or direct current. Complete line includes single and duplex units, the latter designed for conditions involving occasional demands in excess of single unit capacity. Selection of 44 unit numbers in both models is designed to handle from 2000 to 40,000 sq ft of radiation.

### Jack Is Overload Protector

USE REPLY CARD—CIRCLE No. 8

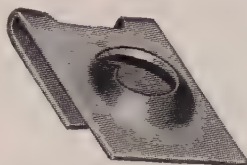
Hydraulic press jack that protects power presses from overload damage is a development of Dayton Rogers Mfg. Co., 2824 13th Ave. South, Minneapolis 7, Minn. The jack also assures constant working pressure at the point of operation at all times, compensating for variation in the piece part's material thickness. Unit

# It might be NEWS TO YOU

only PRESTOLE  
builds ALL

**SHEET METAL NUTS**  
*With a 360° Grip*

**Over 1,000 Shapes and Sizes**

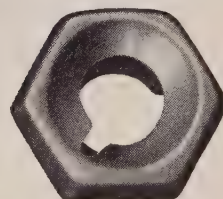


### "J" NUT

"J" Nuts—to fit all metal from .020 to .090 thick. Sizes from 6-32 to 5/16 machine and sheet metal screws. Made in all finishes. Same availability on "U" Nuts as "J". All with the conical dome formed with a full 360° locking grip around screw. No prongs to flatten or break.

### HEX-LOX

Hex-Lox—the Hex Nut with both the 360° conical thread grip and the side-arm thread grip. Weighs 70% less than conventional lock nuts. Has highest installation torque, prevailing torque, and back off torque. Excels in vibration tests and tensile strength. Made in 5 screw sizes from 6-32 to 1/4-20. SAE-1060 steel .016 to .020 thickness.



### CAGE NUT

One-Piece Cage Nuts—combines both nut and cage in one piece. No prongs. Full 360° unbreakable thread grip. Saves material, cuts parts in half, saves handling and assembly time. Made of SAE-1060 steel in all popular sizes.

### PUSH ON

Push-Ons—for smooth studs. The PRESTOLE push-on clover leaf nut has also become very popular because of its 4 point spring tension bite on smoothest studs, whether metal, fibre or plastic. All sizes and finishes.



The growing demand for more PRESTOLE fasteners is due largely to its unique, precision engineered conical grip that bites a full 360° into the root of the screw thread. It's in all PRESTOLE fasteners except those made for smooth studs. PRESTOLE fasteners are preferred because of their greater holding power. Hundreds of millions in use on automobiles, trucks, refrigerators, stoves, heaters, radio, TV and scores of other products. In writing for samples, kindly send blueprints or details of application.



**PRESTOLE CORPORATION**

1349 MIAMI ST. • TOLEDO 5, OHIO

is fastened directly to bolster plate or press bed frame. Hydropneumatic pumps can be operated directly on the average shop air line. Control valves are set to desired tonnage to give overload protection. Jacks are made in eight sizes, to a maximum of 200 tons.

### Steering, Maintenance Eased

USE REPLY CARD—CIRCLE No. 9

Easier steering and faster maintenance are features of an improved lift truck, the Gas Clipper, made by Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich. Im-

proved steering is gained by using an Elliot-type axle with tie rods in the same plane and more nearly in line with the forces they transmit. Steering knuckles are relocated as close to the tire's dead-center shock point as is practical. Louvers on both sides hinge at the bottom and fold down to expose the engine compartment for minor adjustments. For access to the entire engine, radiator and air breather caps are taken off to remove the hood and seat. An instrument panel mounted on the steering column is now standard equipment. Gas cap is recessed into the dash on all mod-

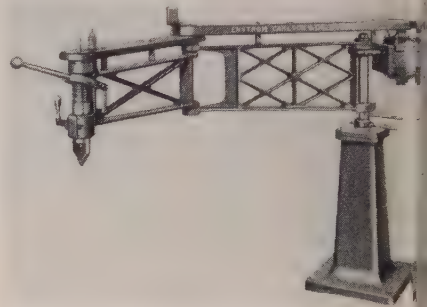
els, completely outside of engine compartment to reduce hazard from spilled gasoline. Redesigned double cylinder tilt system gives better upright stability with more positive control of tilt.

### Radial Arm Drills

USE REPLY CARD—CIRCLE No. 10

Two sizes of radial arm drills, 30 and 71 inches, are reinstated in the line of aircraft production equipment made by Ekstrom, Carlson & Co., 1400 Railroad Ave., Rockford, Ill. The units, offered first during World War II, are designed for fast, light drilling and are adaptable for single piece and production runs. Each drill is available in four types.

Type A is mounted as a complete unit on a table or stand. The drill is used at a fixed height only, and



... for single piece or production runs

no provision is made for vertical adjustment. Type B has a threaded post and support bracket for mounting on a table or stand and can be adjusted vertically up to 6 inches. Type C is identical to B, except that it has its own cast iron base. All above types have inner spindle assembly that slides within an outer sleeve. Type D can be equipped with any of the three above mountings, but has no outer sleeve and inner spindle assembly. Instead, its entire spindle assembly is actuated manually with a four-spoke hand lever by a rack pinion arrangement. A adjustable coil spring counterbalance on down stroke facilitating rapid return of drill spindle to up position. Standard type D spindle speeds are 25 and 4000 rpm. All models except D can be supplied with a gravity-feed drill lubricating system.

### Precision Tapping, Threading

USE REPLY CARD—CIRCLE No. 11

Five sizes of precision automatic tapping and threading machines made by Karl Huller, Ludwigsburg, Germany, are offered for U. S. sale by Carl Hirschmann Co., Manhattan, N. Y.

All are made for mass production operation cycles are entirely automatic.

## Is Your Rail Haulage —all or in part—INDOORS?

This 8-Ton, 36" Gauge, Davenport Diesel Mechanical Locomotive is in Steel Mill Service in Colombia, S.A. It is equipped with Caterpillar D-318 Engine and with Flame Arrestor and Water Wash Muffler System.

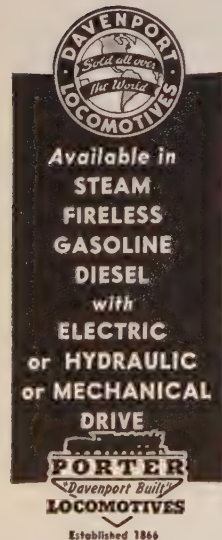


Many modern industrial plants make use of rails within their buildings as well as out of doors. This is now practical, sensible and profitable with Davenport—or Porter—Locomotives especially designed for the purpose. If you are interested, it will be a pleasure to supply such technical information as you may require for a full appreciation of "indoor rail haulage".

### WE MEET YOUR REQUIREMENTS

Whatever your operating conditions or work to be accomplished we can supply a size and type of Davenport or Porter Locomotive to exactly fit your wheels. Send us a description of your proposed operations; we will gladly submit recommendations—without obligation.

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# PRESSING

out the

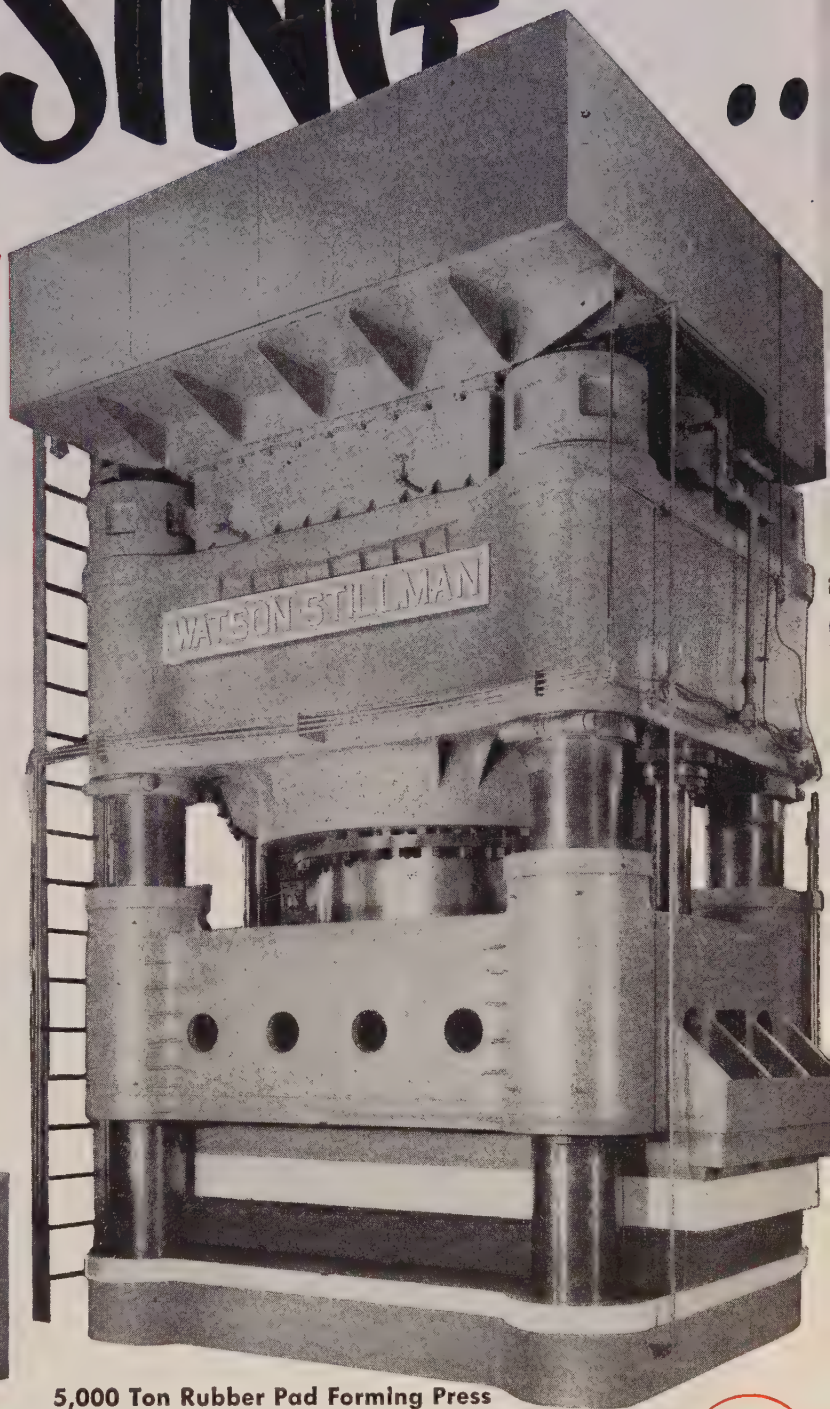
**FORMS for UNCLE SAM!**

Planes ... tanks ... guns ... shells ... shell cases or any one of a thousand and one other items that must be produced, as long as it can be pressed out of metal, there's a W-S Press to do the job ... and more economically, too.

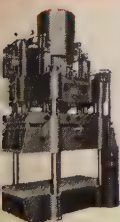
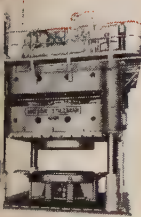
W-S Medium and Deep Draw Presses do things faster. Rejects are virtually eliminated ... present dies and materials can be used ... one or more draws may be cut from a progressive operation, thereby saving man hours on the job ... intermediate annealing is often reduced or eliminated and total production time cut down.

Designed for precision work and built for long service, these W-S Hydraulic Presses offer further advantages in set-up, maintenance and tool life. Available in a large choice of pumping units and controls. It will pay you to investigate their flexibility.

Other W-S Metal Working Presses include those for forming, Flanging, Trimming, Forging, Coining, Hobbing, Extruding, Briquetting, Bending and Straightening.



5,000 Ton Rubber Pad Forming Press



HYDRAULIC MACHINERY DIVISION

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REPRESENTATIVES

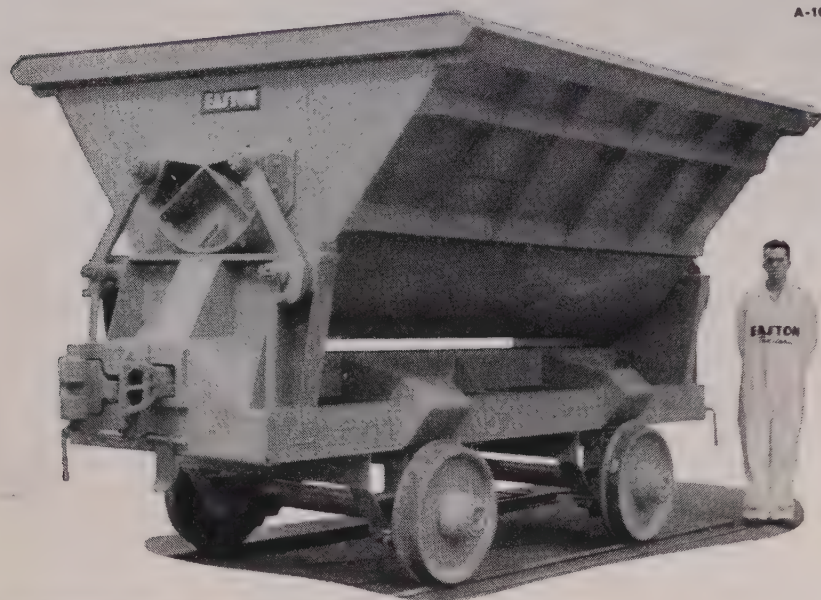
Birmingham 3, Ala. .... George M. Meriwether  
Dallas, Tex. .... M & R Sales Co.  
Denver 2, Colo. .... Overgard Machine Tool Co.  
Indianapolis 20, Ind. . W. K. Millholland Mach. Co.  
Los Angeles 11, Cal. .... H. M. Royal, Inc.

Pittsburgh 19, Pa. .... Stanley Berg & Co.  
Portland, Ore. .... Machinery & Tool Supply Co.  
Rochester 12, N. Y. .... Watson-Stillman Co.  
San Francisco 7, Cal. . Schellenbach Mach. Tool Co.  
Seattle, Wash. .... Machinery & Tool Supply Co.  
Spokane 8, Wash. .... Machinery & Tool Supply Co.  
St. Paul 4, Minn. .... Anderson Machine Tool Co.

Manufactured in Canada by—CANADIAN VICKERS, Ltd., Montreal



A-1025



# EASTON

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design and construction service  
in industrial cars**

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA. • NEW YORK • PHILADELPHIA • PITTSBURGH

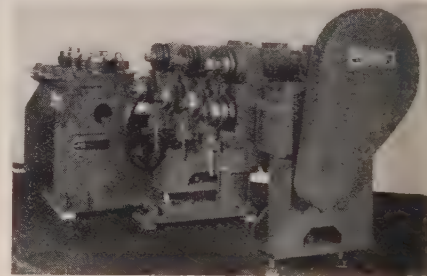
Machines have positive electrical controls, exact limitation of feed depth and wide range of speeds. Smallest of the units, type UG O, is designed for cutting the smallest threads, such as are used in electrical and instrument making. Of the four other types, maximum thread cut in steel ranges from 3/16 to 1-3/16 inch; in brass, from 5/16 to 1-1/2 inch.

The chuck capacities on the four larger models are 0 to 15/64, 5/32 to 7/16, 3/16 to 5/8, and 1/4 to 1 inch. Maximum spindle travels are 1-1/2, 2-3/16, 3-1/8 and 4 inches. Throat depth ranges from 4 1/4 inches to 11 3/4 inches.

## Two-Plane Shape Straightener

USE REPLY CARD—CIRCLE No. 12

Two-plane shape straightener, model TPOMVC, with overhung-mounted variable-center rolls is offered by Medart Co., 3535 DeKalb St., St. Louis 18, Mo. Straightener combines advantages of rapid setup found in overhung roll type with fine control of bending stresses possible in variable



... variable center rolls add versatility

center unit. Variable center rolls permit versatility in adjustment of bending spans required for handling a variety of shapes and sizes. Bending span adjustment, possible with movable roll housings, also prevents bearing overload and promises greater accuracy in straightening operations.

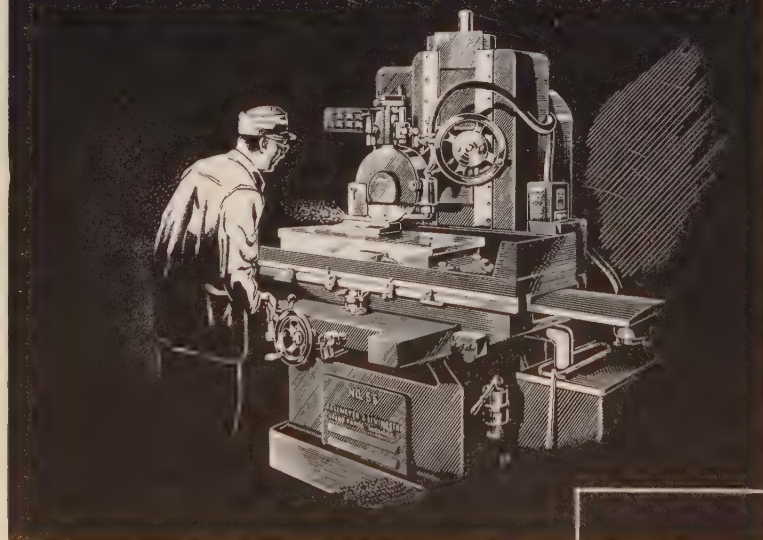
Cross-rolling or reforming cross sections of distorted extrusions or other shapes can be accomplished simultaneously with straightening action by moving the bottom rolls directly under top rolls. Rolls in this position also serve as additional pinch-feed equipment to give extra traction for straightening difficult shapes. All rolls are alloy steel, hardened and ground; gears run in oil within enclosed housings. Pinch feed rolls at the end are air operated.

## Balance Is Fast, Clear

USE REPLY CARD—CIRCLE No. 13

Fast, repetitive weighing or regular laboratory work are operations suited to the model AB-1, an addition to the line of redesigned balances made by Christian Becker Division, Tor-

WHEN THE DECISION IS PRECISION...



Where extreme tolerances are not required, the choice of any particular grinding machine may not be too important. But, where absolute precision is demanded, the choice is usually *Grand Rapids*.

Defense orders make it impossible to fill orders as quickly as we desire—but we know our customers can appreciate the reasons for delay. As always we'll do our best to serve you.

**GALLMEYER & LIVINGSTON CO.**  
307 Straight Ave., Grand Rapids, Mich.

**Grand Rapids Grinders**

—World's finest



**GALLMEYER  
& LIVINGSTON**

sion Balance Co., Clifton, N. J. Optical system of precision-ground lenses project a clear sharp image on a screen positioned for ease and readability. A lamp behind the heat-insulated back panel is projected through a transparent micro scale. Light is automatically switched on and off as beam is released and arrested. Vernier on the screen provides direct positive readings from 1/10 to 100 milligrams each side of the center zero. Automatic dampers at each end of the beam arrest oscillation quickly, further speeding positive reading.

Five Units Added to Lift Line

USE REPLY CARD—CIRCLE No. 14

Towmotor Corp., 1226 E. 152nd St., Cleveland 10, O., announces five models added to its line of industrial trucks. Three of the models, replacing trucks formerly produced, have solid or cushion tires and a shorter wheel base to increase maneuverability; models 480-P and 400-P are equipped with pneumatic tires. The former has 48-inch wheel base, a capacity of 4000 pounds and a 24-inch load center. The latter's wheel base is 40 inches and its capacity is 2000 pounds at a 24-inch load center.

Model 390 has a 39-inch wheel base, a capacity of 3000 pounds at 15-inch load center; model 420 has a 42-inch wheel base and a 4000-pound capacity at 15-inch load center; and model 460 has a 46-inch wheelbase and capacity 4000 pounds at 24-inch load center.

Trolley Brakes Eliminated

USE REPLY CARD—CIRCLE No. 15

Motor driven trolley made by Philadelphia Division, Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa., eliminates trolley brakes and complex electrical speed changing equipment. Improvements are effected through a hydraulic coupling that transmits power from motor to the drive unit through a cushion of oil. Low hoist maintenance costs, increased load and operator's safety are other results of the application of fluid transmission to hoisting equipment.

Trolley motor starts unloaded; comes up to 85 per cent of full speed before starting the load to avoid prolonged inrush of current. Power requirements are less than one-half normal with accompanying reduction in motor heating and maintenance. Fluid coupling replaces accelerating speed control to cut maintenance costs of the more complex equipment. Through smoother acceleration, swinging or pendulum action of the load is reduced and open con-



Butadiene and styrene tank farm

This SPECIAL HAZARD fire protection safeguards chemical processing operations



Most manufacturing plants and many industrial and commercial business operations present certain areas of extreme fire hazard that are not adequately safeguarded through standard methods of fire protection. The chemical processing and storage operation shown is one such case. At this location, *'Automatic' FIRE-FOG* systems of protection detect and dissipate concentrations of vapors above the lower explosive limit. This type of protection assures the maximum in personnel and fire safety, preservation of high-valued equipment and continuity of plant operations.

Like all SPECIAL HAZARD systems, *'Automatic' FIRE-FOG* is specifically engineered for the risk that is protected. Many other installations of similar nature have been made in chemical processing properties throughout the world. And, like any other worth-while product, **FIRE-FOG** stands on its records of achievement . . . records that are written into the reports of all leading insurance bureaus.

Regardless of your SPECIAL HAZARD requirements, you'll find that our preliminary engineering service makes possible a fair economic and adaptability evaluation of all fire protection methods for your own risk. This engineering service plus the facilities of our laboratory and test yard is available to you without cost or obligation. If yours is a special condition—we either have the fire safety answer, or will use our entire facilities to find the answer. Write or call us today

**"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA**  
YOUNGSTOWN 1, OHIO

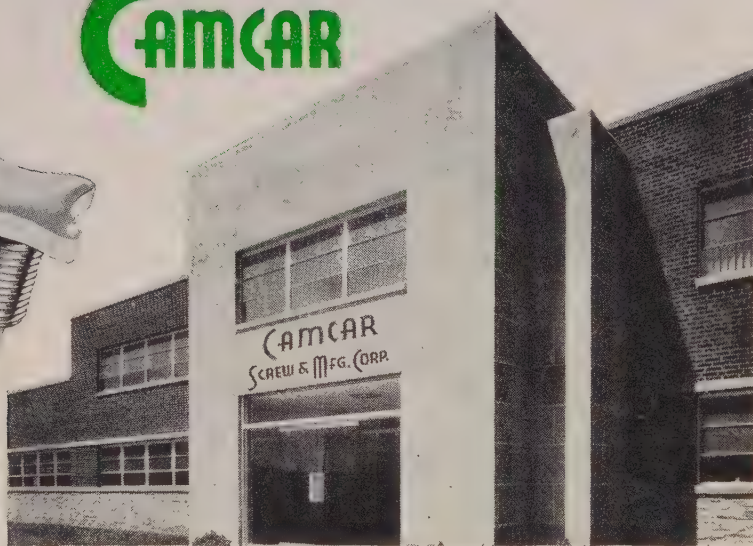
**"Automatic" Sprinkler**  
**FIRST IN FIRE PROTECTION**  
DEVELOPMENT . ENGINEERING      MANUFACTURE . INSTALLATION  
OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

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That's why we say, "Consider Supply First". Hundreds of Camcar Specialists are working every day for this one purpose . . . to keep assembly lines open . . . to demonstrate to you that there's never a need to say, "Our Line Is Down".

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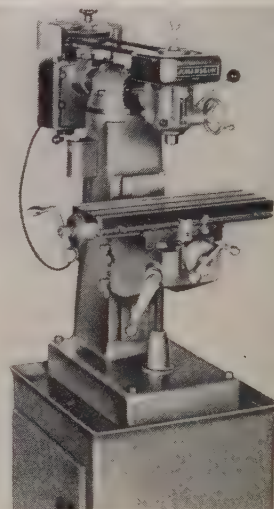


tainers of liquid are less likely to spill. Fluid coupling is available for all the company's power driven trolleys from 1/8 to 12-ton capacity.

## Vertical Milling Machine

USE REPLY CARD—CIRCLE No. 16

Wide range of operation is possible on a vertical milling machine made by Johansson & Windle Co., 6015 Dalin Dr., Skokie, Ill. Machine's feed screws are precision ground and mounted in preloaded ball bearings. Large dials are 3-3/16 inches diameter graduated into 100 increments. Milling unit with 1725 rpm motor,



. . . spindle speeds available to 3250 rpm

included in the machine, provides spindle speeds of 180 to 1000, 3500 to 1900 and 600 to 3250 rpm. Quill travel is 2-1/16 inches.

Handle and wheel feed are provided for drilling and boring operations. Other features are a positive quill lock and micrometer depth stop graduated in thousandths of an inch. Longitudinal feed is 12 inches; cross feed, 4 1/4 inches; vertical feed of knee, 12 inches. Maximum distance from spindle to table is 12 inches; minimum distance spindle to table, 0 inches; and maximum distance spindle to column, 8 3/4 inches.

## Control Unit Shows Pressure

USE REPLY CARD—CIRCLE No. 17

An electronic control system, developed by Henry G. Dietz Co., 12-16 Astoria Blvd., Long Island City 2, N. Y., indicates and controls the differential pressure between volume of corrosive gas and a surrounding gas. In operation its sensing element notes a signal according to the variation in differential pressure. This produces visual indication on the indicating control unit located at 100 to 250 feet from the sensing element. Control unit, in addition to its func-

*Van Huffer  
cold-formed metal shapes  
and tubing are basic  
in better*

building

construction



Whether hidden from sight doing a functional job or exposed to view just looking pretty, you'll find Van Huffer serving modern building construction needs in practically every nook and corner.

Architects, designers and engineers, knowing the structural advantages and versatility of Van Huffer metal shapes and tubing applications, are continually thinking up new uses.

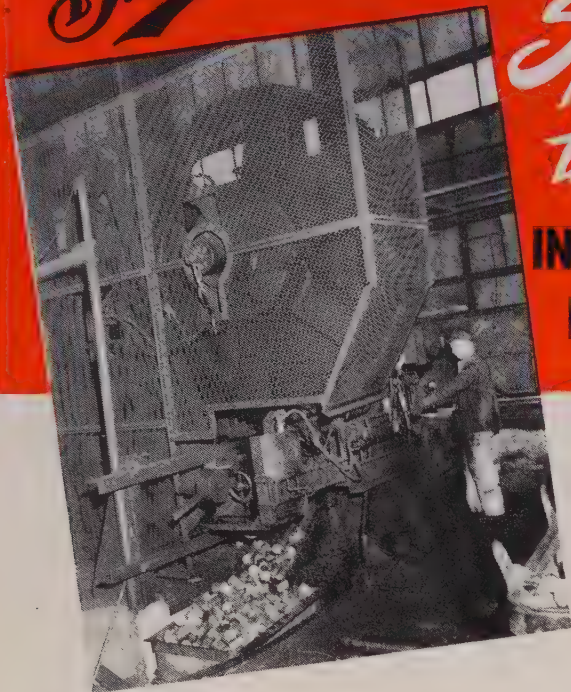
Wherever strength without excessive weight . . . beauty without complicated assembly are necessary characteristics, Van Huffer is basic in better building construction.

**VAN HUFFER**

**TUBE CORPORATION • WARREN, OHIO**



**DED, LOCK SEAM, OPEN SEAM, BUTTED TUBING, SHAPES AND MOULDINGS**

**"Buffalo"****BILLET SHEAR***Speeds up  
the job* **at****INTERNATIONAL  
HARVESTER****8****CLEAN, QUICK  
CUTS PER  
MINUTE!**

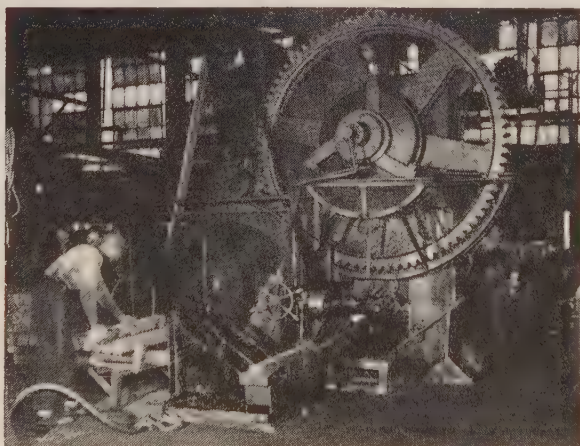
Here's the kind of speed that brings unit costs down. This "Buffalo" Billet Shear, shown shearing 3-inch alloy steel at the Fort Wayne Works truck plant of the International Harvester Company, operates at 8 strokes per minute. Rear view is shown. Cuts are clean. If you're looking for a faster way to cut billets and flat bars, look into "Buffalo" Billet Shears.



**WRITE FOR  
BULLETIN 3295-A**

**11 SIZES TO  
CHOOSE FROM!**

At right, rear view of "Buffalo" No. 15 Billet Shear cutting round cornered squares at a famous automobile plant.

**BUFFALO "Buffalo" FORCE COMPANY**

158 Mortimer St.

Buffalo, New York

Canadian Blower &amp; Forge Co., Ltd., Kitchener, Ont.

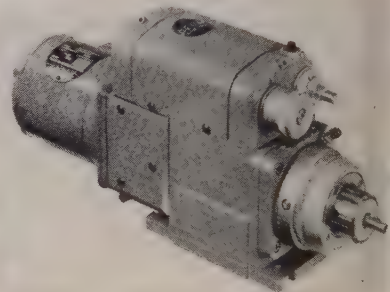
**DRILLING PUNCHING CUTTING SHEARING BENDING**

tion as a visual indicator, is a two position controller that closes a set of contacts when differential pressure drops below a predetermined value. Variation of pressure differential necessary for operating contact points is provided by a manual control on the indicating control unit. This control system, with proper modifications of sensing element, can be adjusted to indicate linear movement.

**Air Hydraulic Drill Unit**

USE REPLY CARD—CIRCLE No. 18

Delta Power Tool Division, Rockwell Mfg. Co., 600 E. Vienna Ave., Milwaukee 1, Wis., offers its Delta 19-150 air hydraulic drill unit. The drill's applications range through drilling, reaming, tapping, chamfering, spot facing and centering. As a basic unit, the model is adaptable to special machines, where infinitely feeds eliminate need for cams and permit rapid adjustment to suit requirements.



... on special machines, no need for cams

quirements needed for each operation. Because of built-in switches, a group of the units can be mounted on a framework and interlocked electrically with the fixtures to become a special machine.

Thrust is obtained from energy received from the plant compressed air supply. Sealed pumpless hydraulic system provides feed control; depth controls are adjustable positive stops. Controls for feed, length of rapid traverse and final depth are grouped at front of the unit and all are infinitely variable for their entire range. Feed control varies from 0 to 1 inches per minute by means of a metering valve.

**Welding Head Is Automatic**

USE REPLY CARD—CIRCLE No. 19

Automatic control of both welding head and positioner are features of model 944 welding head made by Mir-O-Col Alloy Co. Inc., 312 North Ave. 21, Los Angeles 31, Calif. Operation of the high-frequency pilot unit, if one is used, is also automatic. Electromechanical control circuit also

omatically stops both head and positioner drives when arc is broken or electrodes stick to workpiece. High-frequency is cut off instantly when arc is established.

Driving motor, designed by the company especially for the head, operates on both the welding voltage and a separate 100-v source. It is independent of the positioner and welding transformer power supply, eliminating phasing problems. Feed rolls are adjustable quickly without removal from the drive shaft to accommodate any electrode size from  $\frac{1}{8}$  to  $\frac{3}{8}$ -inch. Voltage and current meters are standard equipment; maximum current capacity is 2000 amp.

## Key Operated Selector Switch

USE REPLY CARD—CIRCLE No. 20

Class 9001 type TSK key operated selector switch is announced by Square D Co., Milwaukee 12, Wis. It is available as a two or three-position switch with a variety of cams and contact blocks to meet the switching requirements of practically any application.

## Speed Chuck

USE REPLY CARD—CIRCLE No. 21

Standard Hampton speed chuck, available from Wallace Pawley Enterprises, Los Angeles 11, Calif., has wide capacity range that handles all shapes of stock with same jaws and permits individual jaw adjustment for zeroing runout, or compensating for wear as it occurs. Each of the three jaws is capable of individual adjustment over its full capacity range.

## Filter Removes Water

USE REPLY CARD—CIRCLE No. 22

Because of its extra size and extended surface, the compressed air line filter offered by Air-Line Engineering Co., Cleveland, O., also functions as a condenser. Known as Air-Lenco, it has a steel outer shell 6 inches in diameter and 36 inches long and a steel inner cartridge 5 inches in diameter by 24 inches long, loosely packed with Fiberglas.

## Coil Grab

USE REPLY CARD—CIRCLE No. 23

One operator using the coil grab introduced by Dixon Research Inc., Rockford, Ill., can lift the coil from pallet up to a vertical position in one motion. A prong tapered to fit between coils, in space made by coil hands, is positioned while opposite jaw is placed in center of coil. As crane lifts, grab automatically adjusts to coil and prong slides between coils.

As coil lifts, grab turns to allow coil to move to vertical position, locked by its own weight.

## Large Size Photocopying Unit

USE REPLY CARD—CIRCLE No. 24

Vacuum Seal Portagraph, a contact printer made by Remington Rand Inc., New York 10, N. Y., comes in two models, one with a copy surface area of 30 x 42 inches and the other with a 42 x 60-inch area. Unit features a single set of white lamps which provide all the varying degrees of light intensity required in contact

printing. The lamp layout operating on a single circuit by a rheostat control furnishes proper lighting for each individual type of reproduction.

## Move Objects at All Angles

USE REPLY CARD—CIRCLE No. 25

Ball transfers, available from Mathews Conveyer Co., Ellwood City, Pa., are designed to move objects at all angles. They are made in five basic types. Type 101 (capacity 50 pounds) and 201A (capacity 100 pounds) are usually welded or bolted to steel plates to form a table on which ma-



## NO RAVAGING HEAT robs these record-speed presses of full productive capacity

Day in and day out, double shift production of 1260 deep drawn stainless steel pieces per press per hour . . . that's the record of a battery of six of these Lake Erie double action hydraulic presses in the plant of a leading automotive equipment manufacturer.

Safeguarding the hydraulic power of each of these 300-ton capacity giants, by effectively controlling oil temperatures, are Ross Type BCF Exchangers.

By factory-equipping its presses with these compact, fully standardized all-copper and copper alloy Ross units, Lake Erie Engineering Corp. assures its customers of best possible protection against pump slippage and breakdown of vital oil properties by keeping oil temperature within safe and effective limits . . . an important way to maintain continuous, full-productive capacity.

Write for illustrated Broadside 1.1K4 picturing Ross Exchanger applications on the nation's leading hydraulic equipment.

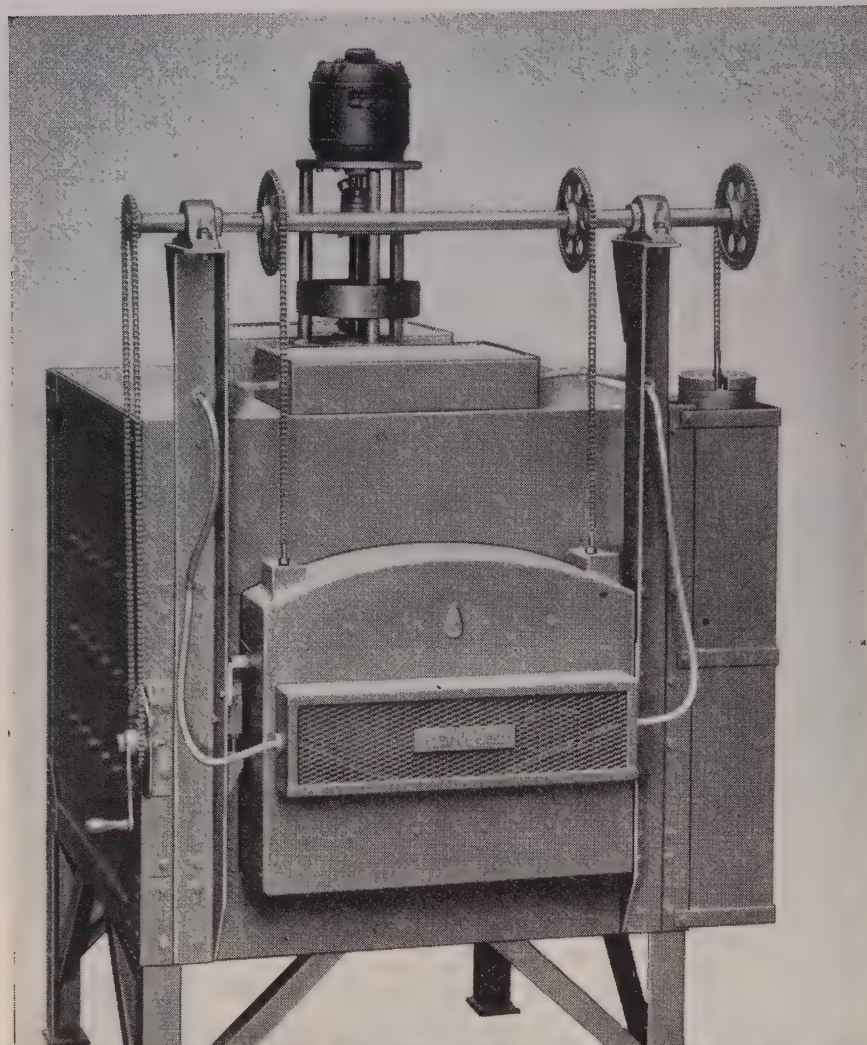


## EXCHANGERS

ROSS HEATER & MFG. CO., INC.

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION  
1431 WEST AVE. BUFFALO 13, N. Y.  
In Canada, Horton Steel Works, Limited, Fort Erie, Ont.

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Multi-Range  
**BOX TYPE**  
Convection  
**FURNACE**  
For Uniform  
Temperatures  
400° F. to 1850° F.

Here is an all-purpose furnace with a wide range of temperatures and high degree of uniformity. These furnaces are equipped with powerful centrifugal type alloy fans designed to operate throughout all working temperatures.

Hevi Duty Multi-Range furnaces are especially suitable for drawing, tempering, and annealing of non-ferrous metals, aluminum brazing, annealing cast iron, normalizing and hardening of steels either with or without a protective atmosphere.

Write for bulletin HD 341

## HEVI DUTY ELECTRIC COMPANY

HEAT TREATING FURNACES **HEVI-DUTY** ELECTRIC EXCLUSIVELY  
DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS  
MILWAUKEE 1, WISCONSIN

materials can be moved in any direction. Type 202A (capacity 100 pounds), 504 (capacity 250 pounds) and 750 (capacity 650 pounds), are threaded on both ends of pipe mountings.

### Disk Type Magnetic Brake

USE REPLY CARD—CIRCLE No. 26

Dings Brakes Inc., Milwaukee 4, Wis., announces a line of alternating and direct current direct acting disk type magnetic brakes. It is designed to stop any motor instantly, to hold the load and to release with no drag. Brake is spring engaged and magnetically released. Unit was designed to mount on Nema type C motor flange.

### Multipurpose Hose

USE REPLY CARD—CIRCLE No. 27

Abrasoflex multipurpose hose, offered by Mercer Rubber Corp., New York, N. Y., is oil and abrasion resistant. It is available with a black cover with one or two braid, high tensile reinforcement in seven sizes ranging from  $\frac{1}{8}$  to 1-inch ID.

### Two-Piece Fastener

USE REPLY CARD—CIRCLE No. 28

Lock bolts, high strength, two-piece fasteners consisting of pin and a collar are available from Cherry River Co., Los Angeles, Calif. Pin is inserted in the work from one side and the collar slipped onto the pin from the opposite side. A special pneumatic tool installs the fastener.

### Selenium Rectifier Power Units

USE REPLY CARD—CIRCLE No. 29

Custom-made alternating to direct current rectifier power conversion units of high current and voltage capacities are announced by Syntro Co., Homer City, Pa. This development is possible by the manufacture of extra large selenium rectifier cells by the company's vacuum process.

### Automatic Feed Plier

USE REPLY CARD—CIRCLE No. 30

Model P7 hog-ring type stapler made by Bostitch Inc., Westerly, R. I., has been improved by adding a heavy reinforcing plate to jaw of the magazine fed hog ringer. Wire, rods and cables up to  $\frac{1}{2}$ -inch in diameter can easily pass through the opened staple which can be closed on small as 5/16-inch.

### Self-Locking Anchor Nuts

USE REPLY CARD—CIRCLE No. 31

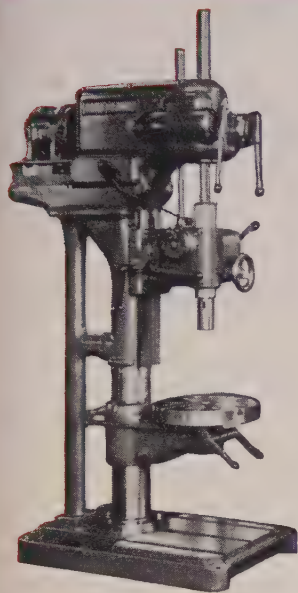
Self-locking anchor nuts, available from Kaynar Mfg. Co. Inc., Los Angeles, Calif., consist of a flange anchoring portion integral with

**THE**

# CLEEREMAN

**LINE**

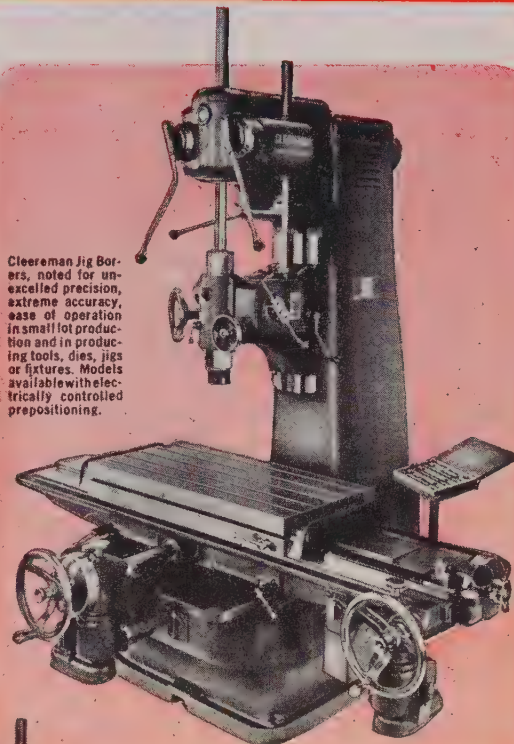
**OF PRECISION JIG BORERS and DRILLING MACHINES**



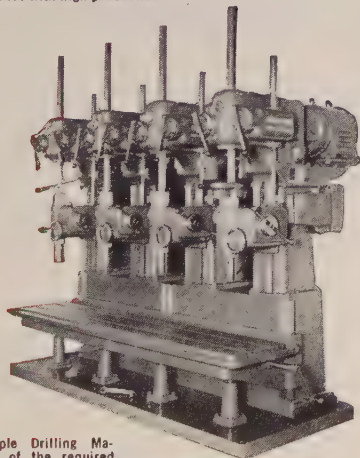
Cleereman Model 325 Single Unit Sliding Head Drilling Machines combine extreme sensitivity with rugged construction, are extremely versatile and may be used for production drilling and tapping.



Cleereman Round Column Drilling Machines produce accurate holes at high speed and at low cost and are general purpose machines with high production.

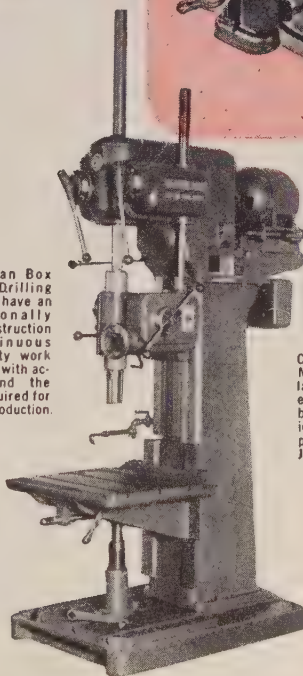


Cleereman Jig Borer, noted for unexcelled precision, extreme accuracy, ease of operation in small lot production and in producing tools, dies, jigs or fixtures. Models available with electrically controlled prepositioning.

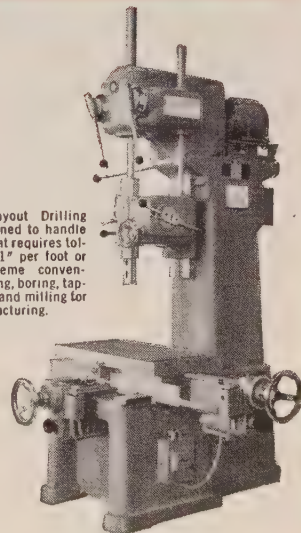


Cleereman Multiple Drilling Machines consisting of the required number of machines of any of the three types supplied to meet individual requirements.

Cleereman Box Column Drilling Machines have an exceptionally rigid construction for continuous heavy duty work combined with accuracy and the speed required for low cost production.



Cleereman Layout Drilling Machine designed to handle layout work that requires tolerances of .001" per foot or broader. Extreme convenience for drilling, boring, tapping, reaming and milling for jigless manufacturing.



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Machinery & Engineering  
Company

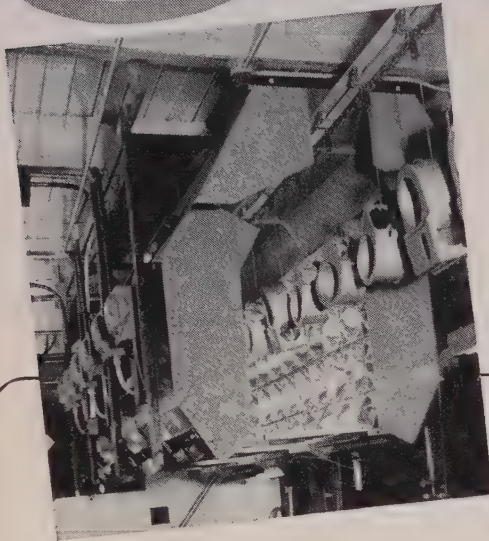
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THOUSANDS OF PLANTS

# Switch to FOSTORIA INFRA-RED



**Most efficient of all industrial ovens for finish baking and other heat applications**

## SAVES SPACE

Fostoria Infra-red ovens operate on a comparatively short cycle which results in smaller oven requirements. They may also be suspended from ceiling mounts to eliminate floor space entirely.

## SAVES TIME

Reduces processing time from hours to minutes because of the inherent speed of Infra-red. There is no time lag in starting an oven, the heat is instantaneous.

## SAVES MANPOWER—MANHOURS

Ideal for conveyORIZED production methods. Reduces excessive product handling. Turns out more pieces per day with ease, with less people.

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Faster production, lower operating costs, improved quality, result in lowest "per piece" cost.

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Write, today, for this factual information on this Infra-red process and equipment as engineered by Fostoria. Technical data applicable to your operations will be included if you send us general facts about your particular problem. A Fostoria representative will gladly analyze your production needs and submit definite recommendations and carefully forecasted results for your consideration.



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**INFRA-RED  
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SYSTEM**

thin-walled draw shell which is fully tapped throughout its length. Made of high carbon annealed spring steel, it is crimped and then heat treated to provide a strong flexible threaded portion which resiliently grips the bolt within the span of the normally required number of threads without necessitating an auxiliary locking device.

## Heavy Duty Primer

USE REPLY CARD—CIRCLE No. 32

Primer P-50, developed by Prufco Laboratories Inc., New York 17, N. Y., is composed of a heavy-bodied oil-modified synthetic resin vehicle, carrying a high percentage of inhibitive pigments, principally zinc chromate. It may be applied on severely corroded metal surfaces. Primer requires overnight drying prior to application of active-solvent finish coats.

## Compression Pipe Coupling

USE REPLY CARD—CIRCLE No. 33

Compression pipe coupling that practically eliminates turbulence at the joint is available from Morris Coupling & Clamp Co., Ellwood City, Pa. It will couple ferrous to ferrous or ferrous to nonferrous materials and threaded to nonthreaded pipe. Coupling is made in sizes from 1/2 to 14 inches standard pipe sizes, including intermediate tube sizes.

## Single Post Drill Jig

USE REPLY CARD—CIRCLE No. 34

A single post drill jig is offered by Esco Engineering Corp., Detroit 10, Mich. Called Mijit B-6, it is recommended for drilling small parts and for short and medium size runs. It provides an infinite number of locking positions due to its patented cam action. Locking is positive and requires no pressure.

## Hermetically Sealed Switch

USE REPLY CARD—CIRCLE No. 35

Electro-Snap Division, Exhibit Supply Co., Chicago, Ill., announces a limit switch that is completely hermetically sealed. It features a tipping

**USE A  
REPLY CARD**

Just circle the corresponding number of any item in this section for more information.

diaphragm action (no sliding parts) to prevent jamming from ice formation. There is no condensation within the enclosed mechanism from humidity and temperature cycling.

## Phosphate-Chromate Primer

USE REPLY CARD—CIRCLE No. 36

Ospho, a balanced formula of orthophosphoric and dichromate with extenders and wetting agents, is used to prime rusted surfaces. Made by Rusticide Products Co., Cleveland 14, O., it is applied to the surface after loose rust and scale have been removed with a wire brush. It causes iron oxide to chemically change to iron phosphate, rust action is stopped and subsequent paint attaches itself so tightly that moisture and oxygen cannot attack the metal. Primer may also be used to prime new ferrous metal.

## Electrode Holder

USE REPLY CARD—CIRCLE No. 37

Caddy type A electrode holder, offered by Erico Products Inc., Cleveland 3, O., features a welding cable connected by the Cadweld process and is available in 300 and 500 amp capacity. The spring assembly is engineered to give a uniform pressure when inserting or ejecting electrodes. After cable is worn and ready to be changed, old cable with stud attached may be cut off and cable Cadwelded to new stud.

## Cushion Clutch Air Screwdrivers

USE REPLY CARD—CIRCLE No. 38

Ingersoll-Rand Co., New York 4, N. Y., announces a line of cushion clutch air screwdrivers in three basic sizes for general manufacturing operations. The engaging clutch enables screwdriver to be moved from screw to screw without stopping the motor as slight forward pressure on the tool is necessary to rotate the bit. Ball-type torque limiting clutch permits adjustment for precise torque control and enables operator to drive all screws to same degree of tightness.

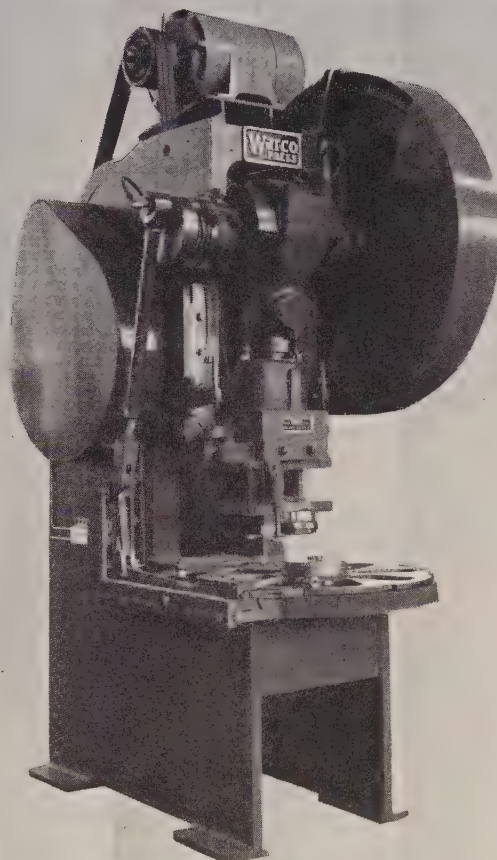
## Follow-Through Type Hole Saws

USE REPLY CARD—CIRCLE No. 39

Designated as Blu-Mol, a line of high speed, heavy duty, follow-through type hole saws in sizes up to 4½ inches in diameter is introduced by Millers Falls Co., Greenfield, Mass. Holes to a depth of 1½-inch may be cut in solid stock. As the body of the saw is slightly smaller than the cutting diameter, the tool follows through the hole it cuts.



# Production minded dial feed press completes automotive filter assembly every two seconds . . .



This Warco 75-ton, single crank, straight side Gap Press simultaneously performs two separate operations on the assembly of an oil filter for automobile crankcases — as fast as an operator can load the eight-station dial feed — and with maximum safety to operator as loading station is in the clear of press slide.

The screen that makes up the filter and the frame for the filter, in a 90° flanged condition, is placed into spring loaded dogs in the dial openings. These progress to the first die on the slide which makes a 45° closing on the flanges . . . then to the second die which closes and coins the flanges, producing a completely assembled unit at each stroke of the press. The completed piece then progresses to the next station where it is automatically ejected by a spring loaded pusher arm.

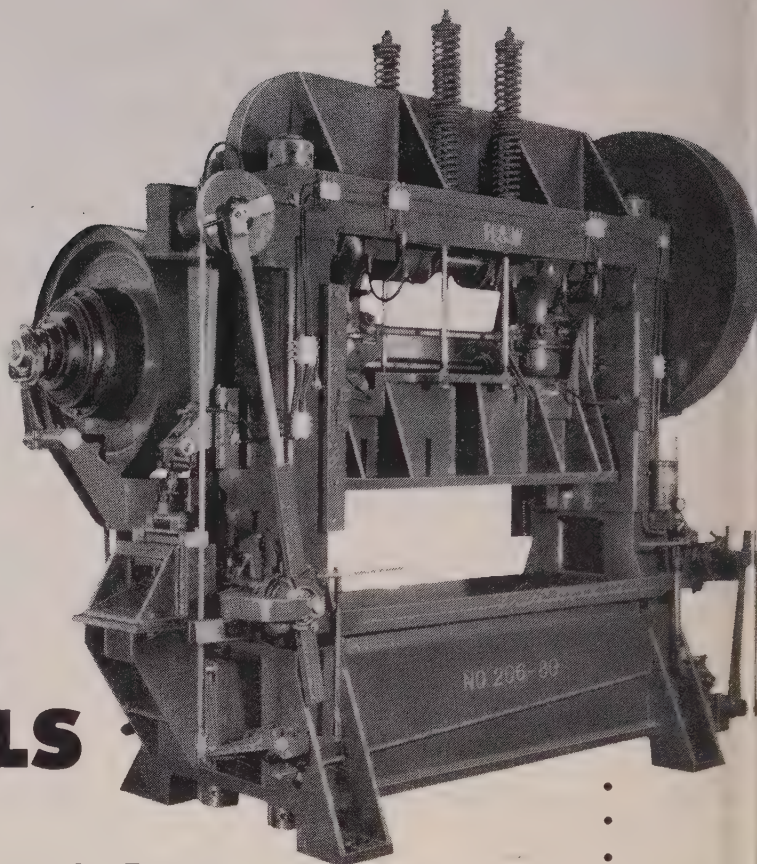
If you have special requirements on your press operations let Warco engineers know about it . . . contact the Warco representative nearest you or write direct . . . it will pay dividends.



**THE FEDERAL MACHINE & WELDER COMPANY**

**WARREN, OHIO**





# BLACKSMITH for ARSENALS

## Henry & Wright's Double Crank Press ... stronger with ACME welded fabrication

Time was when the implements of war had to be shaped by the heat of a forge and the strong arm of a blacksmith on an anvil. Today for the mobilization program this double crank press, precision-engineered by the Henry & Wright division of Emhart Manufacturing Company, cuts and forms strip steel into carbine magazines by the thousands . . . the work of a modern blacksmith speeding production for national defense.

For greater strength and rigidity the frame members, slide, and large gear of this press were all-welded by Acme Tank & Welding. The rugged box construction in the bed, essential to withstand the incessant 150-ton pounding, was made possible by welding.

More and more machinery manufacturers, like Henry & Wright, are relying on Acme for the advantages of welded fabrication because Acme's engineering skill and complete facilities guarantee exact adherence to their specifications, no matter what the size or design of their weldment. Let us show you how an Acme weldment can improve your product.



# ACME TANK and WELDING

DIVISION of THE UNITED TOOL & DIE CO.  
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Write Acme today: send your blue prints or a rough sketch . . . you'll receive a prompt quotation.

- A.S.M.E. Qualified Welders • National Board Approved
- Hartford Steam Boiler Inspection Service • A.P.I. Approved
- Rating Approved by Natl. Assoc. of H.P. & A.C. Contractors
- Underwriters Label and Inspection Service • Navy Approved

**OVERALL** pressure for steel continues unabated. But soft spots are developing in demand, chiefly from consumer durable goods lines, which give the market a spotty appearance. This is reflected in several ways: 1—Conversion deals, especially in sheets, are on the decline; 2—shipments on defense account are improving; 3—premium prices on gray market and imported steel are being shaved; 4—increasingly larger steel tonnage is being diverted to production of those products required chiefly for defense programs. Meanwhile, military and related defense requirements are rising steadily and promise to continue to expand.

**SUPPLY**—Despite growing evidence of slackening demand from consumer durable goods manufacturers, some interests in this consuming area report difficulty in filling their needs. This is true even in sheets which are definitely under less pressure. Explanation for this seeming paradox is found in the fact the slack in sheets is being offset to large extent by increasing diversion of semifinished steel to production of those products in more acute shortage, notably plates which can be rolled on continuous mills. In especially tight supply at present are plates, bars and structural shapes, in that order.

**REQUIREMENTS**—Whether the slackening in demand being experienced in some areas of the market accurately reflect basic economic conditions is debatable. There is evidence to indicate some of the contraction being experienced in certain lines is directly attributable to government restrictions on production. Certainly there still is a large unsatisfied demand for steel as evidenced by the fact producers experienced a flurry of orders in virtually all major products just before Nov. 2, the date on which they were to open their books on a first-come first-served basis for January under government regulations. Elimination by NPA of the 10 per cent product set-aside under this regulation failed to check the flow of requests for January tonnage. Modification of the order came too close to the effective date. It did,

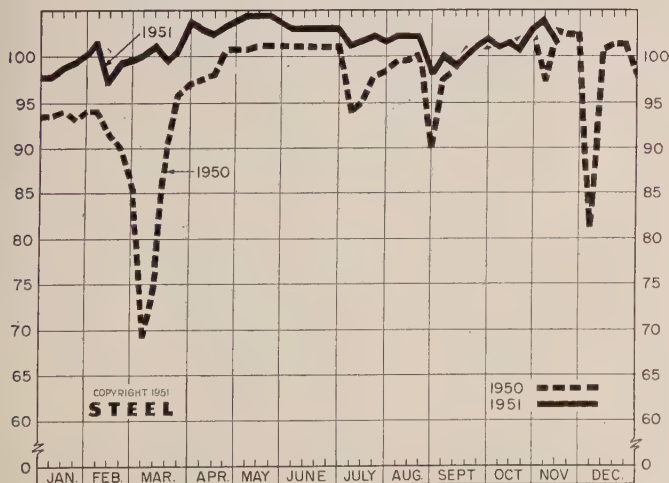
however, limit mill acceptances of additional orders, and to that extent contributed a stabilizing influence in the market.

**PRODUCTS**—Plate producers were under pressure for additional tonnage on the first-come first-served basis just before Nov. 2. But they had little tonnage open for the month. In fact, they will have little tonnage available outside their commitments for months to come barring order cancellations. In structurals, however, the situation presents a different outlook. While supply of shapes is short, fabricators are showing noticeably less concern in their inventory position with their order backlogs shrinking due to government restrictions on building. Early this year they held well over 12 to 15 months work on order. Now they can accept rated tonnage for delivery in five to six months. The bar mills are accepting only high-rated business for second quarter. Bar sizes beyond three inches are in extremely short supply. Sheetmakers, despite the slackening in consumer goods, were deluged with orders for January on a first-come first-served basis. Pig iron now is in closer balance with requirements than it has been in many months. So is coke. This reflects slower demand for castings arising from the contraction in civilian goods production.

**PRICES**—With the exception of a general upward adjustment in galvanized products, reflecting the recent increase in zinc, a downward revision in an eastern seller's quotations on structural shapes and plates, and an upward revision by OPS on southern brown iron ore, the steel and related markets continue to hold at the long-established ceiling levels. STEEL's weighted index on finished steel is unchanged at 171.92 as is the arithmetical composite on finished steel at \$106.32.

**PRODUCTION**—Steelmaking operations declined last week, due primarily to sharp curtailment of production in the Birmingham district as result of labor trouble. Estimated national ingot rate dropped 2.5 points to 101.5 per cent of capacity.

**NATIONAL STEELWORKS OPERATIONS**



**DISTRICT INGOT RATES**

Percentage of Capacity Engaged at Leading Production Points				
	Week Ended Nov. 10	Change	Same Week 1950	1949
Pittsburgh .....	102	- 1*	104.5	2
Chicago .....	106	- 3*	106	6
Mid-Atlantic .....	101	0	100	65
Youngstown .....	106	0	104	5
Wheeling .....	100	- 1.5	98.5	60
Cleveland .....	104	+ 0.5*	98	14
Buffalo .....	104	0	104	85
Birmingham .....	17	-43	100	6
New England .....	90	0	90	58
Cincinnati .....	106	+ 3	106	52
St. Louis .....	90	- 1	91.5	91.5
Detroit .....	104	+ 2.5	106	41
Western .....	102	- 3	103	29.5
Estimated national rate .....	101.5	- 2.5	103	24

Based on weekly steelmaking capacity of 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950; 1,843,516 tons for 1949.

\* Change from revised rate for preceding week.

## Composite Market Averages

## FINISHED STEEL INDEX, Weighted:

	Nov. 8 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100) ..	171.92	171.92	171.92	157.76	112.04
Index in cents per lb. ....	4.657	4.657	4.657	4.274	3.035

## ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT .....	\$106.32	\$106.32	\$106.32	\$95.09	\$64.45
No. 2 Fdry, Pig Iron, GT ..	52.54	52.54	52.54	49.54	28.17
Basic Pig Iron, GT .....	52.16	52.16	52.16	49.04	27.50
Malleable Pig Iron, GT ..	53.27	53.27	53.27	50.27	28.79
Steelmaking scrap, GT ..	43.00	43.00	44.00	41.67	19.17

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

## Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

## FINISHED MATERIALS

	Nov. 8 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh ....	3.70	3.70	3.70	3.45	2.50
Bars, H.R., Chicago .....	3.70	3.70	3.70	3.45	2.50
Bars, H.R., del. Philadelphia	4.223	4.223	4.223	3.93	2.86
Bars, C.F., Pittsburgh ....	4.55	4.55	4.55	4.15	3.10
Shapes, Std., Pittsburgh ..	3.65	3.65	3.65	3.40	2.35
Shapes, Std., Chicago ....	3.65	3.65	3.65	3.40	2.35
Shapes, del. Philadelphia ..	3.918	3.918	3.918	3.46	2.48
Plates, Pittsburgh .....	3.70	3.70	3.70	3.50	2.50
Plates, Chicago .....	3.70	3.70	3.70	3.50	2.50
Plates, Coatesville, Pa. ....	4.15	4.15	4.15	3.90	2.50
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.50	2.50
Plates, Claymont, Del. ....	4.15	4.15	4.15	3.90	2.50
Sheets, H.R., Pittsburgh ..	3.60-75	3.60-75	3.60-75	3.35	2.425
Sheets, H.R., Chicago .....	3.60	3.60	3.60	3.35	2.425
Sheets, C.R., Pittsburgh ..	4.35	4.35	4.35	4.10	3.275
Sheets, C.R., Chicago .....	4.35	4.35	4.35	4.10	3.275
Sheets, C.R., Detroit .....	4.55	4.55	4.55	4.30	3.375
Sheets, Galv., Pittsburgh ..	4.80	4.80	4.80	4.40	4.05
Strip, H.R., Pittsburgh ....	3.75-4.00	3.75-4.00	3.75-4.00	3.50-3.75	2.35
Strip, H.R., Chicago .....	3.50	3.50	3.50	3.25	2.35
Strip, C.R., Pittsburgh ....	4.65-5.35	4.65-5.35	4.65-5.35	4.15-4.85	3.05
Strip, C.R., Chicago .....	4.90	4.90	4.90	4.30	3.15
Strip, C.R., Detroit .....	4.85-5.60	4.85-5.60	4.85-5.60	4.35-5.10	3.15
Wire, Basic, Pittsburgh ....	4.85-5.10	4.85-5.10	4.85-5.10	4.50-4.75	3.05
Nails, Wire, Pittsburgh ....	5.90-6.20	5.90-6.20	5.90-6.20	5.30-5.60	3.75
Tin plate, box, Pittsburgh ..	\$8.70	\$8.70	\$8.70	\$7.50	\$5.25

## SEMI-FINISHED

Billets, forging, Pitts. (NT)	\$66.00	\$66.00	\$66.00	\$63.00	\$47.00
Wire rods, $\frac{3}{8}$ "- $\frac{1}{2}$ ", Pitts....	4.10-30	4.10-30	4.10-30	3.85	2.30

## PIG IRON, Gross Ton

Bessemer, Pitts. ....	\$53.00	\$53.00	\$53.00	\$50.00	\$29.00
Basic Valley .....	52.00	52.00	52.00	49.00	28.00
Basic, del. Phila. ....	56.61	56.61	56.61	53.39	29.93
No. 2 Fdry, Pitts. ....	52.50	52.50	52.50	49.50	28.50
No. 2 Fdry, Chicago .....	52.50	52.50	52.50	49.50	28.50
No. 2 Fdry, Valley .....	52.50	52.50	52.50	49.50	28.50
No. 2 Fdry, Del. Phila. ....	57.11	57.11	57.11	53.89	30.43
No. 2 Fdry, Birm. ....	48.88	48.88	48.88	45.88	24.88
No. 2 Fdry (Birm.) del. Cin.	55.49	55.49	55.49	52.58	28.94
Malleable Valley .....	52.50	52.50	52.50	49.50	28.50
Malleable, Chicago .....	52.50	52.50	52.50	49.50	28.50
Charcoal, Lyles, Tenn. ....	66.00	66.00	66.00	62.00	33.00
Ferromanganese, Etna, Pa.	188.00	188.00	188.00	175.00	140.00*

\* Delivered, Pittsburgh.

## SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts. ....	\$44.00	\$44.00	\$45.00	\$44.00	\$20.00
No. 1 Heavy Melt, E. Pa. ....	42.50	42.50	43.50	41.00	18.75
No. 1 Heavy Melt, Chicago ..	42.50	42.50	43.50	40.00	18.75
No. 1 Heavy Melt, Valley ..	44.00	44.00	45.00	43.75	20.00
No. 1 Heavy Melt, Cleve. ....	43.00	43.00	44.00	43.25	19.50
No. 1 Heavy Melt, Buffalo ..	43.00	43.00	44.00	41.50	19.25
Rails, Re-rolling, Chicago ..	52.50	52.50	52.50	64.50	22.25
No. 1 Cast, Chicago .....	49.00*	49.00*	49.00*	53.50	20.00

\* F.o.b. shipping point.

## COKE, Net Ton

Beehive, Furn. Connsvl. ....	\$14.75	\$14.75	\$14.75	\$14.25	\$8.75
Beehive, Fdry., Connsvl. ....	17.50	17.50	17.50	16.50	9.50
Oven Fdry., Chicago .....	23.00	23.00	23.00	21.00	14.35

## NONFERROUS METALS

Copper, del. Conn. ....	24.50	24.50	24.50	24.50	14.375
Zinc, E. St. Louis .....	19.50	19.50	19.50	17.50	9.25
Lead, St. Louis .....	18.80	18.80	18.80	16.80	8.10
Tin, New York .....	103.00	103.00	103.00	140.00	52.00
Aluminum, del. ....	19.00	19.00	19.00	19.00	15.00
Antimony, Laredo, Tex. ....	42.00	42.00	42.00	32.00	14.50
Nickel, refinery, duty paid.	56.50	56.50	56.50	48.00	35.00

## PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

## PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malle- able	Besse- mer
Bethlehem, Pa. B2 .....	\$54.00	\$54.50	\$55.00	\$55.50
Brooklyn, N. Y., del. ....	59.18	59.18	59.68	59.68
Newark, del. ....	56.87	57.37	57.87	58.37
Philadelphia, del. ....	56.61	57.11	57.61	58.11

## Birmingham District

Alabama City, Ala. R2 .....	48.38	48.88	48.88	48.88
Birmingham R2 .....	48.38	48.88	48.88	48.88
Birmingham S9 .....	48.38	48.88	48.88	48.88
Woodward, Ala. W15 .....	48.38	48.88	48.88	48.88
Cincinnati, del. ....	55.49	55.49	55.49	55.49

## Buffalo District

Buffalo R2 .....	52.00	52.50	53.00	53.00
Buffalo H1 .....	52.00	52.50	53.00	53.00
Tonawanda, N.Y. W12 .....	52.00	52.50	53.00	53.00
No. Tonawanda, N.Y. T9 .....	52.00	52.50	53.00	53.00
Boston, del. ....	62.11	62.61	63.11	63.11
Recheater, N.Y., del. ....	54.88†	55.38†	55.88†	55.88†
Syracuse, N.Y., del. ....	55.91†	56.41†	56.91†	56.91†

## Chicago District

Chicago I-3 .....	52.00	52.50	52.50	53.00
Gary, Ind. U5 .....	52.00	52.50	52.50	53.00
Indiana Harbor, Ind. I-2 .....	52.00	52.50	52.50	53.00
So. Chicago, Ill. W14 .....	52.00	52.50	52.50	53.00
So. Chicago, Ill. Y1 .....	52.00	52.50	52.50	53.00
So. Chicago, Ill. U5 .....	52.00	52.50	52.50	53.00
Milwaukee, del. ....	54.06	54.56	54.56	55.06
Muskegon, Mich., del. ....	58.47	58.47	58.47	58.47

## Cleveland District

Cleveland A7 .....	52.00	52.50	52.50	53.00
Cleveland R2 .....	52.00	52.50	52.50	53.00
Akron, O., del. from Cleve. ....	54.61	55.11	55.11	55.61
Lorain, O. N3 .....	52.00	52.50	52.50	53.00
Duluth I-3 .....	52.00	52.50	52.50	53.00
Erie, Pa. I-3 .....	52.00	52.50	52.50	53.00
Everett, Mass. E1 .....	57.00	57.50	57.50	58.00
Fontana, Calif. K1 .....	58.00	58.50	58.50	59.00
Geneva, Utah G1 .....	52.00	52.50	52.50	53.00
Seattle, Tacoma, Wash., del. ....	60.66	60.66	60.66	60.66
Portland, Oreg., del. ....	60.66	60.66	60.66	60.66
Los Angeles, San Francisco, del. ....	60.16	60.66	60.66	60.66
Granite City, Ill. G4 .....	53.90	54.40	54.90	55.40
St. Louis, del. (inc. tax) .....	54.66	55.16	55.66	56.16
Ironton, Utah C11 .....	52.00	52.50	52.50	53.00
Lone Star, Tex. L6 .....	48.00	48.50	48.50	49.00
Minnequa, Colo. C10 .....	54.00	55.00	55.00	56.00

## Pittsburgh District

Neville Island, Pa. P6 .....	52.50	52.50	53.00	53.00
Pitts. N.&S. sides, Ambridge, Aliquippa, del. ....	53.80	53.80	54.30	54.30
McKees Rocks, del. ....	53.54	53.54	54.04	54.04
Lawrenceville, Homestead, McKeesport, Monaca, del. ....	54.07	54.07	54.57	54.57
Verona, del. ....	54.57	54.57	55.07	55.07
Brackenridge, del. ....	54.82	54.82	55.32	55.32
Bessemer, Pa. U5 .....	52.00	52.50	53.00	53.00
Clairton, Rankin, So. Duquesne, Pa. U5 .....	52.00	52.50	53.00	53.00
McKeesport, Pa. N3 .....	52.00	52.50	53.00	53.00
Monessen, Pa. P7 .....	54.00	54.50	55.00	55.00
Sharpsville, Pa. S6 .....	52.00	52.50	53.00	53.00
Steeltown, Pa. B2 .....	54.00	54.50	55.00	55.50
Swedeland, Pa. A3 .....	56.00	56.50	57.00	57.50
Toledo, O. I-3 .....	52.00	52.50	52.50	53.00
Cincinnati, del. ....	57.47	57.97	58.47	58.97
Troy, N.Y. R2 .....	54.00	54.50	55.00	55.50

## Youngstown District

Hubbard, O. Y1 .....	52.00	52.50	52.50	53.00
Youngstown Y1 .....	52.00	52.50	52.50	53.00
Youngstown U5 .....	52.00	52.50	52.50	53.00
Mansfield, O., del. ....	56.65	57.15	57.15	57.65

\* Low phos, southern grade. † Preliminary.

## PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.00%.

2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 0.50% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add \$2 per ton.

each additional 0.25%, add \$1 per ton.

## BLAST FURNACE SILVER PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add \$1.50 for each 0.5% Si)

Jackson, O. G2, J1 .....	\$64.00	\$64.00	\$64.00	\$64.00
Buffalo H1 .....	61.00	61.00	61.00	61.00

## ELECTRIC FURNACE SILVER PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; \$1.50 for each 0.5% Mn over 1%; \$1 for each 0.045% max. P)

Niagara Falls, N.Y. P15 .....	\$84.00	\$84.00	\$84.00	\$84.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2 .....	92.00	92.00	92.00	92.00
Keokuk, OH & Fdry., 12 1/2 lb piglets, 16% Si, frt. allowed K2 .....	92.00	92.00	92.00	92.00
Wenatchee, Wash., O.H. & Fdry., frt. allowed K2 .....	92.00	92.00	92.00	92.00

## CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3 .....	\$64.00	\$64.00	\$64.00	\$64.00
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## LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7 .....	\$64.00	\$64.00	\$64.00	\$64.00
Steeltown, Pa. B2 .....	61.00	61.00	61.00	61.00
Philadelphia delivered .....	61.00	61.00	61.00	61.00
Troy, N.Y. R2 .....	61.00	61.00	61.00	61.00

## Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Nov. 8, 1951; cents per pound except as otherwise noted. Changes shown in Italics. Code numbers following mill prices indicate producing company; key on next two pages

<b>INGOTS, Carbon, Forging (NT)</b>		<b>STRUCTURAL</b>		<b>PLATES, Carbon Steel</b>		<b>BARS &amp; SMALL SHAPES, H.R., High-Strength Low-Alloy</b>		<b>Buffalo R2</b>	
Montana, Calif. K1	\$79.00	Alabama City, Ala. R2	3.60	Alabama City, Ala. R2	3.70	Albuquerque, Pa. J5	5.55	Cleveland R2	3.70
Munhall, Pa. U5	52.00	Albuquerque, Pa. J5	3.65	Ashland, Ky. (15) A10	3.70	Bessemer, Ala. T2	5.55	Emeryville, Calif. J7	4.45
<b>INGOTS, Alloy (NT)</b>		Bessemer, Ala. T2	3.65	Bessemer, Ala. T2	3.70	Bethlehem, Pa. B2	5.55	Fairfield, Ala. T2	3.70
Detroit R7	\$54.00	Clairemont, Pa. B2	3.70	Clairemont, Pa. B2	3.70	Clairemont, Pa. U5	5.55	Fontana, Calif. K1	4.40
Montana, Calif. K1	80.00	Clairemont, Pa. U5	3.65	Clairemont, Pa. U5	3.70	Cleveland R2	5.55	Gary, Ind. U5	3.70
Houston, Tex. S5	62.00	Fairfield, Ala. T2	3.65	Cleveland J5, R2	3.70	Fairfield, Ala. T2	5.55	Houston, Tex. S5	4.10
Midland, Pa. C18	54.00	Fontana, Calif. K1	4.25	Coatesville, Pa. L7	4.15	Fontana, Calif. K1	6.60	Ind. Harbor, Ind. I-2, Y1	3.70
Munhall, Pa. U5	54.00	Gary, Ind. U5	3.65	Conshohocken, Pa. A3	4.15	Gary, Ind. U5	5.55	Johnstown, Pa. B2	3.70
<b>INGOTS, BLOOMS &amp; SLABS</b>		Geneva, Utah G1	3.65	Fairfield, Ala. T2	3.70	Ind. Harbor, Ind. I-2	5.55	Kansas City, Mo. S5	4.30
<b>Carbon, Re-rolling (NT)</b>		Houston, Tex. S5	4.05	Fontana, Calif. (30) K1	4.30	Indiana Harbor, Ind. Y1	6.05	Lackawanna, N.Y. B2	3.70
Bessemer, Pa. U5	\$56.00	Ind. Harbor, Ind. I-2	3.65	Gary, Ind. U5	3.70	Johnstown, Pa. B2	5.55	Los Angeles B3	4.40
Clairemont, Pa. U5	56.00	Johnstown, Pa. B2	3.70	Granite City, Ill. G4	4.40	Lackawanna, N.Y. B2	5.55	Milton, Pa. B6	4.20
Emeryville, Ala. T2	56.00	Kansas City, Mo. S5	4.25	Geneva, Utah, G1	3.70	Los Angeles B3	6.25	Minneapolis, Colo. C10	4.50
Fairfield, Ala. T2	56.00	Lackawanna, N.Y. B2	3.70	Harrisburg, Pa. C5	6.30	Pittsburgh J5	5.55	Niles, Calif. P1	5.05
Fontana, Calif. K1	75.00	Los Angeles B3	4.25	Houston, Tex. S5	4.10	Seattle B3	6.30	Pittsburgh, Calif. C11	4.40
Gary, Ind. U5	56.00	Minneapolis, Colo. C10	4.10	Ind. Harbor, Ind. I-2, Y1	3.70	So. Duquesne, Pa. U5	5.55	Pittsburgh J5	3.70
Johnstown, Pa. B2	56.00	Munhall, Pa. U5	3.65	Johnstown, Pa. B2	3.70	So. San Francisco B3	6.30	Portland, Ore. O4	4.65
Lackawanna, N.Y. B2	56.00	Niles, Calif. (22) P1	4.85	Lackawanna, N.Y. B2	3.70	Struthers, O. Y1	6.05	Sand Springs, Okla. S5	4.60
Munhall, Pa. U5	56.00	Phoenixville, Pa. P4	5.90	Minneapolis, Colo. C10	4.50	Youngstown U5	5.55	Seattle B3, N14	4.45
So. Chicago, Ill. U5	56.00	Portland, Ore. O4	4.50	Munhall, Pa. U5	3.70	<b>BARS, Cold-Finished Carbon</b>		So. Chicago, Ill. R2	3.70
So. Duquesne, Pa. U5	56.00	Seattle B3	4.30	Pittsburgh J5	3.70	Ambridge, Pa. W18	4.55	So. Duquesne, Pa. U5	3.70
<b>Carbon, Forging (NT)</b>		So. Chicago, Ill. U5, W14	3.65	Seattle B3	4.60	Beaver Falls, Pa. M12, R2	4.55	So. San Francisco B3	4.45
Bessemer, Pa. U5	\$66.00	So. San Francisco B3	4.20	Sharon, Pa. S3	3.95	Buffalo B5	4.60	Sparrows Point, Md. B2	3.70
Buffalo R2	66.00	Torrance, Calif. C11	4.25	So. Chicago, Ill. U5, W14	3.70	Camden, N.J. P13	5.00	Struthers, O. Y1	3.70
Canton, O. R2	66.00	Weirton, W. Va. W6	3.90	Sparrows Point, Md. B2	3.70	Carnegie, Pa. C12	4.55	Torrance, Calif. C11	4.40
Clairemont, Pa. U5	66.00	<b>Alloy Stand. Shapes</b>		Steubenville, O. W10	3.70	Chicago W18	4.55	Youngstown, R2, U5	3.70
Cleveland R2	66.00	Clairemont, Pa. U5	4.35	Warren, O. R2	3.70	Cleveland A7, C20	4.55	<b>BARS, Reinforcing</b>	
Conshohocken, Pa. A3	73.00	Fontana, Calif. K1	5.55	Weirton, W. Va. W6	4.00	Detroit P17	4.70	<b>(Fabricated to Consumers)</b>	
Detroit R7	69.00	Munhall, Pa. U5	4.35	Youngstown R2, U5, Y1	3.70	Donora, Pa. A7	4.55	Huntington, W. Va. W7	5.50
Emeryville, Ala. T2	66.00	So. Chicago, Ill. U5	4.35	<b>PLATES, Carbon A.R.</b>		Elyria, O. W8	4.55	Johnstown, 1/4" B2	4.75
Fairfield, Ala. T2	66.00	Albuquerque, Pa. J5	5.50	Fontana, Calif. K1	5.45	Franklin Park, Ill. N5	4.55	Los Angeles B3	4.45
Fontana, Calif. K1	55.00	Bessemer, Ala. T2	5.50	Geneva, Utah G1	4.85	Gary, Ind. R2	4.55	Marion, O. P11	5.00
Gary, Ind. U5	66.00	Bethlehem, Pa. (14) B2	5.50	<b>PLATES, Wrought Iron</b>		Green Bay, Wis. F7	4.55	Seattle B3, N14	5.55
Geneva, Utah G1	66.00	Clairemont, Pa. U5	5.50	Economy, Pa. B14	8.60	Hammond, Ind. L2, M13	4.55	So. San Francisco B3	5.45
Houston, Tex. S5	74.00	Fairfield, Ala. T2	5.50	<b>BARS, Hot-Rolled Carbon</b>		Hartford, Conn. R2	5.10	Sparrows Pt. 1/4" B2	4.75
Johnstown, Pa. B2	66.00	Fontana, Calif. K1	6.10	Alabama City, Ala. R2	3.70	Harvey, Ill. B5	4.55	Williamsport, Pa. S19	5.10
Lackawanna, N.Y. B2	66.00	Gary, Ind. U5	5.50	Albuquerque, Pa. J5	3.70	Los Angeles R2	6.00	<b>SHEETS, Hot-Rolled Steel</b>	
Los Angeles B3	85.00	Geneva, Utah G1	5.50	Alton, Ill. L1	4.15	Mansfield, Mass. B5	5.10	<b>(18 gage and heavier)</b>	
Munhall, Pa. U5	66.00	Ind. Harbor, Ind. I-2	5.50	Atlanta, Ga. A11	4.25	Massillon, O. R2, R8	4.55	Alabama City, Ala. R2	3.30
Seattle B3	85.00	Ind. Harbor, Ind. Y1	6.00	Bessemer, Ala. T2	3.70	Monaca, Pa. S17	4.55	Ashland, Ky. (8) A10	3.60
So. Chicago R2, U5, W14	66.00	Johnstown, Pa. B2	5.50	Buffalo R2	3.70	Newark, N.J. W18	5.00	Butler, Pa. A10	3.60
So. Duquesne, Pa. U5	66.00	Lackawanna, N.Y. (14) B2	5.50	Canton, O. R2	3.70	Plymouth, Mich. P5	4.80	Cleveland J5, R2	3.60
So. San Francisco B3	85.00	Los Angeles B3	6.05	Clairemont, Pa. U5	3.70	Pittsburgh J5	4.55	Conshohocken, Pa. A3	4.00
<b>Alloy, Forging (NT)</b>		Munhall, Pa. U5	5.50	Cleveland R2	3.70	Putnam, Conn. W18	5.10	Detroit M1	4.40
Bethlehem, Pa. B2	\$70.00	Seattle B3	6.10	Detroit R7	3.85	Revere, Mass. C14	5.10	Ecorse, Mich. (8) G5	3.80
Buffalo R2	70.00	So. Chicago, Ill. U5	5.50	Emeryville, Calif. J7	4.45	St. Louis, Mo. M5	4.95	Fairfield, Ala. T2	3.60
Canton, O. R2	70.00	So. San Francisco B3	6.00	Fairfield, Ala. T2	3.70	So. Chicago, Ill. W14	4.55	Fontana, Calif. K1	4.55
Canton, O. (29) T7	66.00	Struthers, O. Y1	6.00	Fontana, Calif. K1	4.40	Spring City, Pa. (5) K3	5.00	Gary, Ind. U5	3.60
Conshohocken, Pa. A3	77.00	<b>Wide Flange</b>		Gary, Ind. U5	3.70	Struthers, O. Y1	4.55	Geneva, Utah G1	3.70
Detroit R7	73.00	Bethlehem, Pa. B2	3.70	Houston, Tex. S5	4.10	Waukegan, Ill. A7	4.55	Granite City, Ill. G4	4.30
Fontana, Calif. K1	89.00	Clairemont, Pa. U5	3.65	Ind. Harbor, Ind. I-2, Y1	3.70	Youngstown F3, Y1	4.55	Ind. Harbor, Ind. I-2, Y1	3.60
Gary, Ind. U5	70.00	Fontana, Calif. K1	4.65	Johnstown, Pa. B2	3.70	<b>BARS, Cold-Finished Alloy</b>		Irvin, Pa. U5	3.60
Houston, Tex. S5	78.00	Lackawanna, N.Y. B2	3.70	Kansas City, Mo. S5	4.30	Ambridge, Pa. W18	5.40	Lackawanna, N.Y. B2	3.60
Ind. Harbor, Ind. Y1	70.00	Munhall, Pa. U5	3.65	Lackawanna, N.Y. B2	3.70	Beaver Falls, Pa. M12	5.40	Munhall, Pa. U5	3.60
Johnstown, Pa. B2	70.00	So. Chicago, Ill. U5	3.65	Los Angeles B3	4.40	Bethlehem, Pa. B2	5.40	Niles, O. N12	5.25
Lackawanna, N.Y. B2	70.00	So. Chicago, Ill. U5	3.65	Milton, Pa. B6	4.20	Buffalo B5	5.40	Pittsburgh, Calif. C11	4.30
Los Angeles B3	90.00	Bethlehem, Pa. B2	5.50	Minneapolis, Colo. C10	4.15	Camden, N.J. P13	5.80	Pittsburgh J5	3.60
Massillon, O. R2	70.00	Lackawanna, N.Y. B2	5.50	Niles, Calif. P1	5.05	Canton, O. R2	5.40	Sharon, Pa. S3	4.00
Midland, Pa. C18	70.00	Munhall, Pa. U5	5.45	Pittsburgh, Calif. C11	4.40	Canton, O. (29) T7	4.90	So. Chicago, Ill. W14	3.60
Munhall, Pa. U5	70.00	So. Chicago, Ill. U5	5.45	Pittsburgh J5	4.40	Carnegie, Pa. C12	5.40	Sparrows Point, Md. B2	3.60
So. Chicago R2, U5, W14	70.00	<b>BEARING PILES</b>		Portland, Ore. O4	4.65	Chicago W18	5.40	Steubenville, O. W10	3.60
So. Duquesne, Pa. U5	70.00	Munhall, Pa. U5	3.65	Seattle B3, N14	4.45	Cleveland A7	5.45	Torrance, Calif. C11	4.30
Struthers, O. Y1	70.00	So. Chicago, Ill. U5	3.65	So. Chicago R2, U5, W14	3.70	Cleveland C20	5.40	Warren, O. R2	3.60
Warren, O. C17	70.00	<b>PLATES, High-Strength Low-Alloy</b>		So. Duquesne, Pa. U5	3.70	Detroit P17	5.55	Weirton, W. Va. W6	3.60
<b>ROUNDS, SEAMLESS TUBE (NT)</b>		Albuquerque, Pa. J5	5.65	So. San Francisco, Cal. B3	4.45	Donora, Pa. A7	5.45	West Leechburg, Pa. A4	3.75
Canton, O. R2	\$82.00	Bessemer, Ala. T2	5.65	Struthers, O. Y1	3.70	Elyria, O. W8	5.40	Youngstown U5, Y1	3.60
Cleveland R2	82.00	Clairemont, Pa. U5	5.65	Torrance, Calif. C11	4.40	Gary, Ind. R2	5.40	<b>SHEETS, H.R., (19 gage)</b>	
Fontana, Calif. K1	103.00	Cleveland J5, R2	5.65	Weirton, W. Va. W6	3.85	Hammond, Ind. L2, M13	5.40	Alabama City, Ala. R2	4.75
Gary, Ind. U5	82.00	Conshohocken, Pa. A3	5.90	Youngstown R2, U5	3.70	Hartford, Conn. R2	5.85	Dover, O. R1	5.65
Massillon, O. R2	82.00	Fairfield, Ala. T2	5.65	<b>BAR SIZE ANGLES; S. SHAPES</b>		Harvey, Ill. B5	5.40	Ind. Harbor, Ind. I-2	5.40
So. Chicago, Ill. R2	82.00	Fontana, Calif. (30) K1	6.25	Albuquerque, Pa. J5	3.70	Lackawanna, N.Y. B2	5.40	Mansfield, O. B6	5.65
So. Duquesne, Pa. U5	82.00	Gary, Ind. U5	5.65	Atlanta A11	4.25	Mansfield, Mass. B5	5.85	Niles, O. N12	5.75
<b>SHEET BARS (NT)</b>		Geneva, Utah G1	5.65	Johnstown, Pa. B2	3.70	Massillon, O. R2, R8	5.40	Torrance, Calif. C11	5.40
Fontana, Calif. K1	\$89.00	Ind. Harbor, Ind. I-2	5.65	Lackawanna, N.Y. B2	3.70	Midland, Pa. C18	5.40	<b>SHEETS, H.R., (14-ga., heavier)</b>	
<b>SKELP</b>		Ind. Harbor, Ind. Y1	6.15	Los Angeles B3	5.35	Monaca, Pa. S17	5.40	<b>High-Strength Low-Alloy</b>	
Albuquerque, Pa. J5	\$3.45	Johnstown, Pa. B2	5.65	Los Angeles B3	5.35	Newark, N.J. W18	5.75	Cleveland J5, R2	5.40
Munhall, Pa. U5	3.35	Munhall, Pa. U5	5.65	Massillon, O. R2	4.30	Plymouth, Mich. P5	5.60	Conshohocken, Pa. A3	5.65
Warren, O. R2	3.35	Pittsburgh J5	5.65	Midland, Pa. C18	4.30	So. Chicago, Ill. R2, W14	5.40	Ecorse, Mich. G5	5.95
Youngstown, R2, U5	3.35	Seattle B3	6.55	So. Chicago R2, U5, W14	4.30	Struthers, O. Y1	5.40	Fairfield, Ala. T2	5.40
<b>WIRE RODS</b>		Sharon, Pa. S3	5.70	So. Duquesne, Pa. U5	4.30	Warren, O. C17	5.40	Fontana, Calif. K1	6.35
Alton, Ill.	4.40	So. Chicago, Ill. U5	5.65	Struthers, O. Y1	4.30	Waukegan, Ill. A7	5.45	Gary, Ind. U5	5.40
Alabama City, Ala. R2	4.10	<b>PLATES, Open-Heather Alloy</b>		Youngstown Y1	6.15	Worcester, Mass. A7	5.75	Ind. Harbor, Ind. I-2	5.40
Buffalo W12	4.10	Claymont, Del. C22	4.85	<b>BARS, Hot-Rolled Alloy</b>		Youngstown F3, Y1	5.40	Indiana Harbor, Ind. Y1	5.90
Cleveland A7	4.10	Coatesville, Pa. L7	5.25	Bethlehem, Pa. B2	4.30	<b>RAIL STEEL BARS</b>		Irvin, Pa. U5	5.40
Donora, Pa. A7	4.10	Conshohocken, Pa. A3	5.05	Buffalo R2	4.30	Chicago Hts. (3.4) C2	4.75	Lackawanna (35) B2	5.40
Fairfield, Ala. T2	4.10	Fontana, Calif. K1	5.70	Canton, O. R2	4.30	Chicago Hts. (3.4) I-2	4.75	Pittsburgh J5	5.40
Fontana, Calif. K1	4.90	Gary, Ind. U5	4.75	Clairemont, Pa. U5	4.30	Franklin, Pa. (3.4) F5	4.75	Sharon, Pa. S3	5.40
Los Angeles B3	4.90	Ind. Harbor, Ind. I-2	4.75	Detroit R7	4.45	Fort Worth, Tex. (26) T4	4.85	So. Chicago, Ill. U5	5.40
Minneapolis, Colo. C10	4.35	Ind. Harbor, Ind. Y1	4.75	Ecorse, Mich. G5	4.65	Huntingt. W. Va. (3) W7	5.50	Sparrows Point (36) B2	5.40
Innessen, Pa. P7	4.30	Johnstown, Pa. B2	4.75	Fontana, Calif. K1	5.35	Marion, O. (3) P11	4.75	Warren, O. R2	5.40
So. Tonawanda, N.Y. B11	4.10	Munhall, Pa. U5	4.75	Gary, Ind. U5	4.30	Moline, Ill. (3) R2	3.80	Weirton, W. Va. W6	5.75
Pittsburgh, Calif. C11	4.75	Sharon, Pa. S3	5.20	Houston, Tex. S5	4.70	Tonawanda (3.4) B12	4.75	Youngstown U5	5.40
Portsmouth, O. P12	4.30	So. Chicago, Ill. U5	4.75	Ind. Harbor, Ind. I-2, Y1	4.30	Williamsport (3) S19	5.00	Youngstown Y1	5.90
Steubenville, N.J. R5	4.20	Sparrows Point, Md. B2	4.75	Johnstown, Pa. B2	4.30	<b>Williamsport (4) S19</b>		<b>SHEETS, Cold-Rolled</b>	
So. Chicago, Ill. R2	4.10	<b>FLOOR PLATES</b>		Kansas City, Mo. S5	4.90	<b>BARS, Wrought Iron</b>		<b>High-Strength Low-Alloy</b>	
Sparrows Point, Md. B2	4.20	Cleveland J5	4.75	Lackawanna, N.Y. B2	4.30	Dover, N.J. (Staybolt) U1	15.00	Cleveland J5, R2	6.55
Terling, Ill. (1) N15	4.10	Conshohocken, Pa. A3	4.75	Los Angeles B3	5.35	Dover, (Eng. Bolt) U1	13.50	Ecorse, Mich. G5	7.10
Struthers, O. Y1	4.10	Ind. Harbor, Ind. I-2	4.75	Massillon, O. R2	4.30	Dover, (Wrgt. Iron) U1	12.25	Fontana, Calif. K1	7.50
Torrance, Calif. C11	4.90	Munhall, Pa. U5	4.75	So. Chicago R2, U5, W14	4.30	Economy, Pa. (S.R.) B14	9.60	Gary, Ind. U5	6.55
Worcester, Mass. A7	4.40	So. Chicago, Ill. U5	4.75	So. Duquesne, Pa. U5	4.30	Economy, Pa. (D.R.) B14	11.90	Indiana Harbor, Ind. Y1	7.05
<b>SHEET STEEL PILING</b>		<b>PLATES, Ingot Iron</b>		Struthers, O. Y1	4.30	Economy, (Staybolt) B14	12.20	Indiana Harbor, Ind. I-2	6.55
Ind. Harbor, Ind. I-2	4.45	Ashland, Cal. (15) A10	3.95	Warren, O. C17	4.30	McK. Rks. (Staybolt) L5	15.40	Irvin, Pa. U5	6.

# MARKET PRICES

## SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler, Pa. A10	4.35
Cleveland J5, R2	4.35
Ecorse, Mich. G5	4.55
Fairfield, Ala. T2	4.35
Follansbee, W. Va. F4	5.35
Fontana, Calif. K1	5.30
Gary, Ind. U5	4.35
Granite City, Ill. G4	5.05
Ind. Harbor, Ind. I-2, Y1	4.35
Irvin, Pa. U5	4.35
Lackawanna, N.Y. B2	4.35
Middletown, O. A10	4.35
Pittsburgh, Calif. C11	5.30
Pittsburgh J5	4.35
SparrowsPoint, Md. B2	4.35
Staubenville, O. W10	4.35
Warren, O. R2	4.35
Weirton, W. Va. W6	4.35
Youngstown Y1	4.35

## SHEETS, Galv'd No. 10 Steel

Alabama City, Ala. R2	4.80
Ashland, Ky. (8) A10	4.80
Canton, O. R2	4.80
Dover, O. R1	5.50
Fairfield, Ala. T2	4.80
Gary, Ind. U5	4.80
Granite City, Ill. G4	5.50
Ind. Harbor, Ind. I-2	4.80
Irvin, Pa. U5	4.80
Kokomo, Ind. (13) C16	5.20
Martins Ferry, O. W10	4.80
Niles, O. N12	6.00
Pittsburgh, Calif. C11	5.55
SparrowsPoint, Md. B2	4.80
Staubenville, O. W10	4.80
Torrance, Calif. C11	5.55
Weirton, W. Va. W6	4.80

## SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin, Pa. U5	7.20
SparrowsPoint (39) B2	6.75

## SHEETS, Galvannealed Steel

Canton, O. R2	5.35
Irvin, Pa. U5	5.35
Kokomo, Ind. (13) C16	5.75
Niles, O. N12	6.55

## SHEETS, ZINCGRIP Steel No. 10

Butler, Pa. A10	5.05
Middletown, O. A10	5.05

## SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles, O. R2 (28)	5.65
Weirton, W. Va. W6	5.50

## SHEETS, Zinc Alloy

Ind. Harbor, Ind. I-2	5.70
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## SHEETS, Drum Body

Pittsburgh, Calif. C11	4.30
Torrance, Calif. C11	4.30

## SHEETS, Well Casing

Fontana, Calif. K1	5.10
Torrance, Calif. C11	5.10

## BLUED Stock, 29 ga.

Yorkville, O. W10	6.80
Follansbee, W. Va. (23) F4	6.85

## TIN PLATE, Electrolytic (Base Box)

	0.25-lb	0.50 lb	0.75lb
Aliquippa, Pa. J5	\$7.15	\$7.40	\$7.80
Fairfield, Ala. T2	7.25	7.50	7.90
Gary, Ind. U5	7.15	7.40	7.80
Granite City, Ill. G4	7.35	7.60	8.00
Ind. Harbor, Ind. I-2, Y1	7.15	7.40	7.80
Irvin, Pa. U5	7.15	7.40	7.80
Niles, O. R2	7.15	7.40	7.80
Pittsburgh, Calif. C11	7.90	8.15	8.55
SparrowsPoint, Md. B2	7.25	7.50	7.90
Weirton, W. Va. W6	7.15	7.40	7.80
Yorkville, O. W10	7.15	7.40	7.80

## SHEETS, SILICON, H.R. or C.R. (22 Ga.)

	Field	Armature	Electric	Motor	Dyna-
Bech Bottom W10 (cut lengths)	...	7.25	8.50	9.30	...
Brackenridge, Pa. A4	...	7.75	9.00	9.80	...
Granite City, Ill. G4 (cut lengths)	...	7.95	9.20	...	...
Ind. Harbor, Ind. I-2	6.95	7.25	(34)	...	...
Mansfield, O. E6 (cut lengths)	7.10	7.25	7.75	9.00	9.80
Niles, O. N12 (cut lengths)	...	6.75	7.25	...	...
Vandergrift, Pa. U5	...	7.25	7.75	9.00	9.80
Warren, O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville, O. A10	...	7.25	7.75	9.00	9.80

## SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths 1/2 cut lower)

	72	65	58	52
Bech Bottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge, Pa. A4	10.35	...	...	...
Vandergrift, Pa. U5	10.35	10.90	11.60	12.40
Warren, O. R2	10.35	...	...	...
Zanesville, O. A10	10.35	10.90	11.60	12.40

## H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler, Pa. A10 (C.R.)	...	...	14.75	15.25
Vandergrift, Pa. U5	12.90	13.75	14.75	15.25

## SHEETS, Enameling Iron

Ashland, Ky. (8) A10	4.65
Cleveland R2	4.65
Gary, Ind. U5	4.65
Granite City, Ill. G4	5.35
Ind. Harbor, Ind. I-2	4.65
Irvin, Pa. U5	4.65
Middletown, O. A10	4.65
Youngstown Y1	4.65

## BLACK PLATE (Base Box)

Aliquippa, Pa. J5	\$6.25
Fairfield, Ala. T2	6.35
Gary, Ind. U5	6.25
Granite City, Ill. G4	6.45
Ind. Harbor, Ind. I-2, Y1	6.25
Irvin, Pa. U5	6.25
Niles, O. R2	6.25
Pittsburgh, Cal. C11	7.00
SparrowsPoint, Md. B2	6.35
Warren, O. R2	6.25
Weirton, W. Va. W6	6.25
Yorkville, O. W10	6.25

## HOLLOWWARE ENAMELING Black Plate (29 gage)

Follansbee, W. Va. F4	5.85
Gary, Ind. U5	5.85
Granite City, Ill. G4	6.05
Ind. Harbor, Ind. Y1	5.30
Irvin, Pa. U5	5.85
Yorkville, O. W10	6.15

## SHEETS, Culvert

No. 16	Cu	Alloy	Cu	Fe
Ashland, Ky. A10	5.60	...	...	...
Canton, O. R2	5.65	6.10	...	...
Fairfield, Ala. T2	5.60	5.85	...	...
Gary U5	5.60	5.85	...	...
Indiana Harbor I-2	5.60	5.85	...	...
Irvin, Pa. U5	5.60	5.85	...	...
Kokomo, Ind. C16	6.25	...	...	...
Martins Ferry, O. W10	5.60	5.85	...	...
Pittsburgh, Cal. C11	6.35	...	...	...
SparrowsPt. B2	5.60	...	...	...
Torrance, Cal. C11	6.35	...	...	...

## SHEETS, Culvert, No. 16

Pure Iron	
Ashland, Ky. A10	5.85
Fairfield, Ala. T2	5.85

## SHEETS, Hot-Rolled Ingot Iron

18 Gage and Heavier	
Ashland, Ky. (8) A10	3.85
Cleveland R2	4.20
Ind. Harbor, Ind. I-2	3.85
Warren, O. R2	4.20

## SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.95
Middletown, O. A10	4.85
Warren, O. R2	4.95

## SHEETS, Galvanized Ingot Iron

No. 10 flat	
Ashland, Ky. (8) A10	5.03
Canton, O. R2	5.55

## SHEETS, ZINCGRIP Ingot Iron

Butler, Pa. A10	5.30
Middletown, O. A10	5.30

## SHEETS, ALUMINIZED

Butler, Pa. A10	8.15
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## TINPLATE, American 1.25

Coke (Base Box)	lb	lb
Aliquippa J5	\$8.45	\$8.70
Fairfield, Ala. T2	8.55	8.80
Gary, Ind. U5	8.45	8.70
Ind. Har. I-2, Y1	8.45	8.70
Irvin, Pa. U5	8.45	8.70
Pitts., Cal. C11	9.20	9.45
Sp. Pt., Md. B2	8.55	8.80
Warren, O. R2	8.45	8.70
Weirton, W. Va. W6	8.45	8.70
Yorkville, O. W10	8.45	8.70

## MANUFACTURING TERNES (Special Coated)

Fairfield, Ala. T2	\$7.60
Gary, Ind. U5	7.50
Irvin, Pa. U5	7.50
SparrowsPoint, Md. B2	7.60
Yorkville, O. W10	7.50

## SHEETS, LT. Coated Ternes, 6 lb

Yorkville, O. W10	\$8.40
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## SHEETS, Mfg. Ternes, 8 lb

(Commercial Quality)	
Gary, Ind. U5	\$9.50
Yorkville, O. W10	9.50

## SHEETS, Long Ternes Steel

(Commercial Quality)	
Beech Bottom, W. Va. W10	5.20
Gary, Ind. U5	5.20
Mansfield, O. E6	6.05
Middletown, O. A10	5.20
Niles, O. N12	6.00
Weirton, W. Va. W6	5.20

## SHEETS, Long Ternes, Ingot Iron

Middletown, O. A10	5.60
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## ROOFING SHORT TERNES (8 lb Coated)

Gary, Ind. U5	9.50
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## STRIP, Hot-Rolled

### High-Strength Low-Alloy

Bessemer, Ala. T2	5.30
Conshohocken, Pa. A3	5.55
Ecorse, Mich. G5	5.95
Fairfield, Ala. T2	5.30
Fontana, Calif. K1	6.20
Gary, Ind. U5	5.30
Ind. Harb., Ind. I-2	5.30
Indiana Harbor, Ind. Y1	5.80
Lackawanna, N.Y. B2	4.95
Los Angeles (25) B3	6.05
Seattle B3	6.30
Sharon, Pa. S3	5.40
So. San Francisco (25) B3	6.05
SparrowsPoint, Md. B2	4.95
Warren, O. R2	5.30
Weirton, W. Va. W6	5.75
Youngstown Y1	5.80
Youngstown U5	5.30

## STRIP, Cold-Rolled,

### High-Strength Low-Alloy

Cleveland J5	6.70
Cleveland A7	6.55
Dover, O. G6	7.30
Fontana, Calif. K1	6.95
Lackawanna, N.Y. B2	6.40
Sharon, Pa. S3	6.55
SparrowsPoint, Md. B2	6.40
Warren, O. R2	6.55
Weirton, W. Va. W6	7.20
Youngstown Y1	7.05

## Key To Producers

A1 Acme Steel Co.	C10 Colorado Fuel & Iron
A3 Alan Wood Steel Co.	C11 Columbia Steel Co.
A4 Allegheny Ludlum Steel	C12 Columbia Steel & Shaft
A7 American Steel & Wire	C13 Columbia Tool Steel Co.
A8 Anchor Drawn Steel Co.	C14 Compressed Steel Shaft
A9 Angell Nail & Chaplet	C16 Continental Steel Corp.
A10 Armco Steel Corp.	C17 Copperweld Steel Co.
A11 Atlantic Steel Co.	C18 Crucible Steel Co.
A13 American Cladmetals Co.	C19 Cumberland Steel Co.
B1 Babcock & Wilcox Tube	C20 Cuyahoga Steel & Wire
B2 Bethlehem Steel Co.	C22 Claymont Steel Corp.
B3 Beth. Pac. Coast Steel	D2 Detroit Steel Corp.
B4 Blair Strip Steel Co.	D3 Detroit Tube & Steel
B5 Bliss & Laughlin Inc.	D4 Disston & Sons, Henry
B6 Bolard Steel Corp.	D6 Driver Harris Co.
B8 Braeburn Alloy Steel	D7 Dickson Weatherproof
B11 Buffalo Bolt Co.	Nail Co.
B12 Buffalo Steel Co.	E1 Eastern Gas & Fuel Assoc.
B14 A. M. Byers Co.	E2 Eastern Stainless Steel
C1 Calstrip Steel Corp.	E4 Electro Metallurgical Co.
C2 Calumet Steel Div.	E5 Elliott Bros. Steel Co.
Borg-Warner Corp.	E6 Empire Steel Corp.
C4 Carpenter Steel Co.	F2 Firth Sterling Steel
C5 Central Iron & Steel Div.	F3 Fitzsimons Steel Co.
Barium Steel Corp.	F4 Follansbee Steel Corp.
C7 Cleve. Cold Rolling Mills	F5 Franklin Steel Div.
C8 Cold Metal Products Co.	Borg-Warner Corp.
C9 Colonial Steel Co.	F6 Fretz-Mum Tube Co.
	F7 Ft. Howard Steel & Wire

## STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2	3.50
Alton, Ill. L1	3.95
Ashland, Ky. (8) A10	3.50
Atlanta A11	4.05
Bessemer, Ala. T2	3.50
Bridgeport, Conn. (10) S15	4.00
Buffalo (27) R2	3.50
Butler, Pa. A10	3.50
Carnegie, Pa. S18	4.00
Conshohocken, Pa. A3	3.90
Detroit M1	4.40
Ecorse, Mich. G5	3.80
Fairfield, Ala. T2	3.50
Fontana, Calif. K1	4.75
Gary, Ind. U5	3.50
Houston, Tex. S5	4.90
Ind. Harbor, Ind. I-2, Y1	3.50
Johnstown, Pa. (25) B2	3.50
Kansas City, Mo. (9) S5	4.10
Lackawanna, N.Y. (32) B2	3.50
Los Angeles B3	4.25
Milton, Pa. B6	4.00
Minneapolis, Colo. C10	4.55
New Britain (10) S15	4.00
No. Tonawanda, N.Y. B11	3.50
Pittsburgh, Cal. C11	4.25
Riverdale, Ill. A1	3.50
San Francisco S7	4.85
Seattle B3, N14	4.50
Sharon, Pa. S3	4.00
So. Chicago, Ill. W14	3.50
So. San Francisco B3	4.25
SparrowsPoint, Md. B2	3.50
Torrance, Calif. C11	4.25
Warren, O. R2	3.50
Weirton, W. Va. W6	3.80
West Leechburg, Pa. A4	3.75
Youngstown U5, Y1	3.50

## STRIP, Hot-Rolled Alloy

Bridgeport, Conn. (10) S15	5.45
Carnegie, Pa. S18	5.85
Fontana, Calif. K1	6.70
Gary, Ind. U5	5.50
Houston, Tex. S5	5.90
Kansas City, Mo. S5	6.10

## STRIP, Cold-Finished

Spring Steel (Annealed)	0.
Berea, O. C7	5.
Bridgeport, Conn. (10) S15	5.
Bristol, Conn. W1	5.
Carnegie, Pa. S18	5.
Cleveland A7	4.
Dearborn, Mich. D3	5.
Detroit D2	5.
Dover, O. G6	5.
Franklin Park, Ill. T6	5.
Harrison, N.J. C18	5.
Mattapan, Mass. T6	5.
New Britn., Conn. (10) S15	5.
New Castle, Pa. B4	5.
New Castle, Pa. E4	5.
New Haven, Conn. D2	5.
New York W3	5.
Pawtucket, R.I. N8	5.
Cleve. or Pitts. Base	5.
Worcester, Mass., Base	5.
Sharon, Pa. S3	5.
Trenton, N.J. R5	5.
Wallingford, Conn. W2.	5.
Weirton, W. Va. W6	5.
Worcester, Mass. A7	4.
Worcester, Mass. T6	5.
Youngstown C8	5.

TRIP, Cold-Rolled Alloy Steel	
Bridgeport, Conn. (10) S15	10.75
Barnegat, Pa. S18	10.60
Cleveland A7	10.00
Dover, O. G6	10.50
Fontana, Calif. K1	11.65
Harrison, N.J. C18	10.60
Midland, Pa. C18	10.60
New Britain, Conn. (10) S15	10.75
Pawtucket, R.I. (11) N8	10.75
Pawtucket, R.I. (12) N8	11.05
Sharon, Pa. S3	10.60
Worcester, Mass. A7	10.30
Youngstown C8	10.60

TRIP, Hot-Rolled Ingot Iron	
Ashtland, Ky. (8) A10	3.75
Warren, O. R2	4.10

TRIP, Cold-Rolled Ingot Iron	
Warren, O. R2	5.25
NIGHT COOPERAGE HOOP	
Atlanta A11	4.05
Riverdale, Ill. A1	3.90
Sharon, Pa. S3	4.15
Youngstown U5	3.75

WIRE, Merchant Quality	An'd Galv.
6 to 8 gage)	
Alabama City R2	5.70 5.95
Aliquippa J5	5.70 6.15
Atlanta A11	5.95 6.40
Bartonville (19) K4	5.70 6.15
Buffalo W12	4.85
Cleveland A7	5.70 6.15
Crawfordsville M8	5.95 6.40
Donora, Pa. A7	5.70 6.15
Duluth, Minn. A7	5.70 6.15
Fairfield, Ala. T2	5.70 6.15
Houston, Tex. S5	6.10 6.55
Johnstown B2	5.70 6.15
Joliet, Ill. A7	5.70 6.15
Kansas City, Mo. S5	6.30 6.75
Kokomo C16	5.80 6.05
Los Angeles B3	6.65
Minnequa C10	5.95 6.45
Monessen P7	5.95 6.40
Palmer W12	5.15
Pitts., Calif. C11	6.65 6.80
Prtsmth. (18) P12	6.10 6.60
Rankin A7	5.70 6.15
So. Chicago R2	5.70 5.95
So. Fran. C10	6.65 7.10
Sparrows Pt. B2	5.80 6.25
Sterling, Ill. (1) N15	5.70 6.15
Struthers, O. Y1	5.70 6.15
Torrance, Cal. C11	6.65
Worcester A7	6.00 6.45

ROPE WIRE	(A)	(B)
Alton, Ill. L1	8.65	8.90
Bartonville, Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Fostoria, O. S1	8.85	9.10
Johnstown, Pa. B2	8.55	8.80
Monessen, Pa. P16	8.55	8.80
Monessen, Pa. P7	8.80	9.05
Palmer, Mass. W12	8.85	9.10
Portsmouth, O. P12	8.55	8.80
Roebing, N.J. R5	8.85	9.10
Sparrows Pt. B2	8.65	8.90
Struthers, O. Y1	8.55	8.80
Torrance, Cal. C11	8.65	8.90
Worcester J4, T6	8.85	9.10

(A) Flow and Mild Plow.  
(B) Improved Plow.

# Key to Producers

M1 McLouth Steel Corp.	M4 Mahoning Valley Steel	M5 Medart Co.	M6 Mercer Tube & Mfg. Co.	M8 Mid-States Steel & Wire	M9 Midvale Co.	M12 Moltrup Steel Products	M13 Monarch Steel Co.	M14 McInnes Steel Co.	M2 National Supply Co.	M3 National Tube Co.	M7 Nelsen Steel & Wire Co.	M10 NewEng-HighCarb. Wire	M11 Newman-Crosby Steel	M12 Niles Rolling Mill Co.	M14 Northwest Steel Roll. Mills	M15 Northwestern S.&W. Co.	M16 New Delphos Mfg. Co.	M3 Oliver Iron & Steel Corp.	M4 Oregon Steel Mills	M1 Pacific States Steel Corp.	M2 Pacific Tube Co.	M4 Phoenix Iron & Steel Co.	M5 Pilgrim Drawn Steel	M6 Pittsburgh Coke & Chem.	M7 Pittsburgh Steel Co.	M9 Pittsburgh Tube Co.
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WIRE, Manufacturers Bright, Low Carbon	
Alabama City, Ala. R2	4.85
Aliquippa, Pa. J5	4.85
Atlanta A11	5.10
Alton, Ill. L1	5.05
Bartonville, Ill. (1) K4	4.85
Buffalo W12	4.85
Chicago W13	5.10
Cleveland A7, C20	4.85
Crawfordsville, Ind. M8	5.10
Donora, Pa. A7	4.85
Duluth, Pa. A7	4.85
Fairfield, Ala. T2	4.85
Fostoria, O. (24) S1	5.35
Houston S5	5.25
Johnstown, Pa. B2	4.85
Joliet, Ill. A7	4.85
Kansas City, Mo. S5	5.45
Kokomo, Ind. C16	4.95
Los Angeles B3	5.80
Minnequa, Colo. C10	5.10
Monessen, Pa. P7	5.10
Newark 6-8 ga. I-1	5.50
No. Tonawanda B11	4.85
Palmer, Mass. W12	5.15
Pitts., Calif. C11	5.80
Portsmouth, O. P12	5.25
Rankin, Pa. A7	4.85
So. Chicago, Ill. R2	4.85
So. San Francisco C10	5.80
Sparrows Point, Md. B2	4.95
Sterling, Ill. (1) N15	4.85
Struthers, O. Y1	4.85
Torrance, Calif. C11	5.80
Waukegan, Ill. A7	4.85
Worcester, Mass. A7, T6	5.15

WIRE, Cold-Rolled Flat	
Anderson, Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7	5.85
Crawfordsville, Ind. M8	6.20
Detroit D2	6.20
Dover, O. G6	6.20
Fostoria, O. S1	6.00
Kokomo, Ind. C16	5.70
Franklin Park, Ill. T6	6.20
Massillon, O. R8	5.85
Monessen, Pa. P16	5.85
Monessen, Pa. P7	6.10
New Haven, Conn. D2	6.50
Pawtucket, R.I. (12) N8	6.85
Trenton, N.J. R5	6.15
Worcester A7	6.15
Worcester T6	6.50
Worcester W12	6.65

WIRE, Galv'd ACSR for Cores	
Bartonville, Ill. K4	8.50
Monessen, Pa. P16	8.50
Roebing, N.J. R5	8.80
Sparrows Point, Md. B2	8.60
Johnstown, Pa. B2	8.50

WIRE, Tire Bead	
Bartonville, Ill. (1) K4	10.90
Monessen, Pa. P16	11.40
Roebing, N.J. R5	11.55

WIRE (16 gage)	An'd Galv.	Stone Stone
Aliquippa J5	10.15	12.15
Bartonville (1) K4	10.25	11.95
Cleveland A7	10.25	12.15
Crawfordsville M8	10.30	12.00
Fostoria, O. S1	10.40	13.00
Johnstown B2	10.25	12.15
Kokomo C16	10.25	11.95
Minnequa C10	10.40	12.40
Palmer, Mass. W12	10.25	12.15
Pitts., Cal. C11	10.60	12.50
Prtsmth. (18) P12	10.55	12.30
Sparrows Pt. B2	10.35	12.25
Waukegan A7	10.25	12.15

WIRE, M8 Spring, High Carbon	
Aliquippa, Pa. J5	6.25
Alton, Ill. L1	6.45
Bartonville, Ill. (1) K4	6.25
Buffalo W12	6.25
Cleveland A7	6.25
Donora, Pa. A7	6.25
Duluth A7	6.25
Fostoria, O. S1	6.25
Johnstown, Pa. B2	6.25
Los Angeles B3	7.20
Milbury, Mass. (12) N6	8.05
Monessen, Pa. P7, P16	6.25
Palmer, Mass. W12	6.55
Pitts., Calif. C11	7.20
Roebing, N.J. R5	6.55
Portsmouth, O. P12	6.25
So. Chicago, Ill. R2	6.25
So. San Francisco C10	7.20
Sparrows Point, Md. B2	6.35
Struthers, O. Y1	6.25
Trenton, N.J. A7	6.55
Waukegan, Ill. A7	6.25
Worcester A7, T6	6.25
Worcester, Mass. J4	6.75

WIRE, Fine & Weaving (8" Coils)	
Bartonville, Ill. (1) K4	8.90
Buffalo W12	8.90
Chicago W13	8.90
Cleveland A7	8.90
Crawfordsville, Ind. M8	8.95
Fostoria, O. S1	8.90
Johnstown, Pa. B2	8.90
Kokomo, Ind. C16	8.90
Monessen, Pa. P16	8.90
Palmer, Mass. W12	9.20
Portsmouth, O. P12	8.90
Roebing, N.J. R5	9.20
Waukegan, Ill. A7	8.90
Worcester, Mass. A7	9.20

WIRE, Barbed Col.	
Alabama City, Ala. R2	136
Aliquippa, Pa. J5	140
Atlanta A11	143
Bartonville, Ill. (19) K4	143
Crawfordsville, Ind. M8	145
Donora, Pa. A7	140
Duluth, Minn. A7	140
Fairfield, Ala. T2	140
Houston, Tex. S5	148
Johnstown, Pa. B2	140
Joliet, Ill. A7	140
Kansas City, Mo. S5	152
Kokomo, Ind. C16	142
Minnequa, Colo. C10	146
Monessen, Pa. P7	145
Pitts., Calif. C11	160
Portsmouth, O. (18) P12	147
Rankin, Pa. A7	140
So. Chicago, Ill. R2	136
So. San Fran., Calif. C10	160
Sparrows Point, Md. B2	142
Sterling, Ill. (1) N15	140

BALE TIES, Single Loop Col.	
Alabama City, Ala. R2	123
Atlanta A11	126
Bartonville, Ill. (19) K4	123
Crawfordsville, Ind. M8	132
Donora, Pa. A7	123
Duluth, Minn. A7	123
Fairfield, Ala. T2	123
Joliet, Ill. A7	123
Kansas City, Mo. S5	135
Kokomo, Ind. C16	125
Minnequa, Colo. C10	128
Pitts., Calif. C11	147
So. Chicago, Ill. R2	123
So. San Fran., Calif. C10	147
Sparrows Point, Md. B2	125
Sterling, Ill. (1) N15	123

WIRE, Upholstery Spring	
Aliquippa, Pa. J5	5.90
Alton, Ill. L1	6.10
Buffalo W12	5.90
Cleveland A7	5.90
Donora, Pa. A7	5.90
Duluth, Minn. A7	5.90
Johnstown, Pa. B2	5.90
Los Angeles B3	6.85
Monessen, Pa. P7, P16	5.90
New Haven, Conn. A7	6.20
Palmer, Mass. W12	6.20
Pitts., Calif. C11	6.85
Portsmouth, O. P12	5.90
Roebing, N.J. R5	6.20
So. Chicago, Ill. R2	5.90
So. San Francisco C10	6.85
Sparrows Point, Md. B2	6.00
Torrance, Calif. C11	6.85
Trenton, N.J. A7	6.20
Waukegan, Ill. A7	5.90
Worcester, Mass. A7	6.20

WOVEN FENCE, 9-15 1/2 Ga. Col.	
Alabama City, Ala. R2	126
Ala. City, Ala., 17-18 ga. R2	213
Aliquippa, Pa. 9-14 1/2 ga. J5	130
Atlanta A11	133
Bartonville, Ill. (19) K4	130
Crawfordsville, Ind. M8	132
Donora, Pa. A7	130
Duluth, Minn. A7	130
Fairfield, Ala. T2	130
Houston, Tex. S5	138
Johnstown, Pa. B2	130
Johnstown, 17 ga., 6" B2	204
Johnstown, 17 ga., 4" B2	207
Joliet, Ill. A7	130
Kansas City, Mo. S5	142
Kokomo, Ind. C16	132
Minnequa, Colo. C10	138
Monessen, Pa. P7	135
Pitts., Calif. C11	153
Portsmouth, O. (18) P12	137
Rankin, Pa. A7	130
So. Chicago, Ill. R2	126
Sterling, Ill. (1) N15	130

FENCE POSTS	
Chicago Hts., Ill. C2	140
Duluth, Minn. A7	125
Franklin, Pa. F5	140
Huntington, W. Va. W7	140
Johnstown, Pa. B2	140
Marion, O. P11	140
Minnequa, Colo. C10	130
Moline, Ill. R2	136
So. Chicago R2	140
Tonawanda, N.Y. B12	140
Williamsport, Pa. S19	150

TRACK BOLTS (20) Treated	
Kansas City, Mo. S5	9.85
Lebanon, Pa., (32) B2	9.85
Minnequa, Colo. C10	9.85
Pittsburgh O3, P14	9.85
Seattle B3	10.35

RAILS	
Bessemer, Pa. U5	3.60
Ensley, Ala. T2	3.60
Fairfield, Ala. T2	3.60
Gary, Ind. U5	3.60
Huntington, W. Va. W7	3.60
Ind. Harbor, Ind. I-2	3.60
Johnstown, Pa. B2	3.60
Lackawanna B2	3.60
Minnequa, Colo. C10	3.60
Steeltown, Pa. B2	3.60
Williamsport, Pa. S19	3.60

## TOOL STEEL

Grade	\$ per lb	W	G	V	Co	Mo	\$ per lb
Reg. Carbon	0.230	20.25	4.25	1.6	12.25	..	3.535-3.675
Exera Carbon	0.270	19	4	2	7	..	2.460
Spec. Carbon	0.325	18.25	4.25	1	4.75	..	2.125
Oil Hardening	0.350	18	4	2	9	..	2.445-2.450
5% Cr Hot Wrk.	0.350	13.5	4	3	..	..	1.604
Hi-Carbon-Cr.	0.635	6.4	4.5	1.9	..	5	0.96-0.965
18W, 4Cr, IV	1.505	6	4	3	..	6	1.190
18W, 4Cr, 2V	1.650	1.5	4	1	..	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2, V3.

(1) Chicago base.	(24) Deduct 0.20c, finer than 15 Ga.
(2) Angles, flats, bands.	(25) Bar mill bands.
(3) Merchant.	(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.60c.
(4) Reinforcing.	(27) Bar mill sizes.
(5) Philadelphia del.	(28) Bonderized.
(6) Chicago or Birm. base.	(29) Subject to 10% increase.
(7) To jobbers, 3 cols. lower.	(30) Sheared: add 0.35c for universal mill.
(8) 16 gage and heavier.	(31) Not annealed.
(9) 6 in. and narrower.	(32) Rd. edge or square edge.
(10) Pittsburgh base.	(33) To jobbers, deduct 20 cents.
(11) Cleveland & Pittsburgh base.	(34) 7.5c for cut lengths.
(12) Worcester, Mass. base.	(35) 72" and narrower.
(13) Add 0.50c for 17 Ga. & heavier.	(36) 54" and narrower.
(14) Also wide flange beams.	(37) 15 gage & lighter: 60" & narrower.
(15) 1/2" and thinner.	(38) 14 gage & lighter: 48" & narrower.
(16) 40 lb and under.	(39) 48" and narrower.
(17) Flats only.	(40) Lighter than 0.035", 0.035" and heavier, 0.25c higher.
(18) To dealers.	
(19) Chicago & Pittsburgh base.	
(20) Deduct 0.25c for untreated.	
(21) New Haven, Conn. base.	
(22) Del. San Fran. Bay area.	
(23) 28 Ga. 36" wide.	



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These are the special purpose steels that set Crucible apart from most other steel companies. For these special steels must be so carefully compounded, and so sensitively handled that, in most cases, they cannot be mass produced.

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## STANDARD PIPE, T. &amp; C.

Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, %					
			Black			Galvanized		
			A	B	C	D	E	F
1/8	5.50	0.24	34.0	32.0	29.0	+0.5	+2.5	+5.5
1/4	6.0	0.42	28.5	26.5	23.5	+3.5	+5.5	+8.5
3/8	6.0	0.57	23.5	21.5	18.5	+10.0	+12.0	+15.0
1/2	8.5	0.85	36.0	34.0	35.0	12.0	10.0	11.0
3/4	11.5	1.18	39.0	37.0	38.0	16.0	14.0	15.0
1	17.0	1.68	41.5	39.5	40.5	19.5	17.5	18.5
1 1/4	23.0	2.28	42.0	44.0	41.0	20.5	22.5	19.5
1 1/2	27.5	2.78	42.5	41.5	41.5	21.5	20.0	20.5
2	37	3.68	43.0	41.0	42.0	22.0	20.0	21.0
2 1/2	58.5	5.82	43.5	41.5	42.5	23.0	21.0	22.0
3	76.5	7.62	43.5	41.5	42.5	23.0	21.0	21.0

Column A: Etna, Pa. N2; Butler, Pa. 1/4-3/8", F6; Benwood, W. Va., 3/4 points lower on 1/8", 1 1/2 points lower on 1/4", and 2 points lower on 3/8", W10; Sharon, Pa. M6, 1 point higher on 1/8", 2 points lower on 1/4" and 3/8". Following make 1/8" and larger: Lorain, O. N3; Youngstown R2 and 36 3/4% on 3/8" and 4"; Youngstown Y1; Aliquippa, Pa. J5; Fontana, Calif. K1 quotes 1 1/2 points lower on 1/8" and larger continuous weld and 24% on 3/8" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., 1/2" through 3", Y1; Alton, Ill., 2 points lower discount L1.

Column D: Butler, Pa. F6, 1/4-3/8"; Benwood, W. Va. W10, except plus 5 1/2% on 1/8", plus 6% on 1/4", plus 12% on 3/8"; Sharon, Pa. M6, plus 2.5 on 1/8", 1 point lower on 1/4", 1 1/2 points lower on 1" and 1 1/4", 2 points lower on 1 1/2", 2", 2 1/2" and 3". Following quote only on 1/8" and larger: Lorain, O. N3; Youngstown R2, and 15 1/2% on 3/8" and 4"; Youngstown Y1. Aliquippa, Pa. J5 quotes 1 point lower on 3/8", 2 points lower on 1", 1 1/2 points lower on 1 1/4", 2 points lower on 1 1/2" and 2", 1 1/2 points lower on 1 1/2" and 3"; Etna, Pa. N2 and 17 1/2% on 3/8" and 4".

Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, %			
			Seamless		Elec. Weld	
			Black	Galv.	Black	Galv.
1/8	37.0c	3.68	29.5	8.0	29.5	8.0
1/4	58.5	5.82	32.5	11.5	32.5	11.5
3/8	76.5	7.62	32.5	11.5	32.5	11.5
1/2	92.0	9.20	34.5	13.5	34.5	13.5
3/4	\$1.09	10.89	34.5	13.5	34.5	13.5
1	1.48	14.81	37.0	16.0	37.0	16.0
1 1/4	1.92	19.18	37.0	16.0	37.0	16.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1 1/2 pts lower on 2", 1 pt lower on 2 1/2-6 in.; Lorain N3; Youngstown Y1.

Columns C & D: Youngstown R2.

## BOILER TUBES

Net base c.l. prices, dollars per 100 ft. mil; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

In. D.	B.W. Ga.	Seamless		Elec. Weld	
		H.R.	C.D.	H.R.	C.D.
1	13	13.45	16.47	15.36	15.36
1 1/4	13	16.09	19.71	15.61	18.19
1 1/2	13	17.27	21.15	17.25	20.30
1 3/4	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2 1/4	13	24.35	29.82	24.50	28.84
2 1/2	12	26.92	32.97	26.98	31.76
2 3/4	12	29.65	36.32	29.57	34.76
3	12	32.11	39.33	31.33	36.84
3 1/2	12	34.00	41.64	32.89	38.70

## CLAD STEELS

(Cents per pound)

Cladding	Plates—		Strip—		Sheets—	
	Carbon Base	10% 20%	Carbon Base	Both Sides	Carbon Base	Cu Base Both Sides
302	..	..	..	..	19.75	26.24-77.00
304	.. 25.00	29.50	..	..	24.50	27.50-77.00
309	.. 30.50	35.00	..	..	..	..
310	.. 36.50	41.00	..	..	..	144.00
316	.. 29.50	34.00	..	..	26.00	35.92-..
317	.. 34.50	39.00	..	..	..	36.50
318	.. 33.50	38.00	..	..	..	..
321	.. 26.50	31.00-32.00	..	..	23.00	33.00-111.00
347	.. 27.50	32.00	..	..	24.00	33.50-130.00
405	.. 21.25	27.75	..	..	..	..
410	.. 20.75	27.25	..	..	..	..
Nickel	33.55	45.15	41.00	54.00	..	..
Inconel	41.23	54.18	..	..	..	165.00
Monel	34.93	46.28	..	..	..	..

Copper\* .. 23.70† 29.65‡  
\* Deoxidized, † 20.20c for hot-rolled, ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

## BOLTS, NUTS

CARRIAGE, MACHINE BOLTS  
(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)  
6 in. and shorter:  
1/2-in. & smaller diam. 15  
3/8-in. & 1/2-in. .... 18.5  
1/2-in. & larger ..... 17.5  
Longer than 6 in.:  
All diams. .... 14  
Lag bolts, all diams.:  
6 in. and shorter ... 23  
over 6 in. long ... 21  
Ribbed Necked Carriage  
Blank ..... 34  
Plow ..... 34  
Step, Elevator, Tap and  
Sleigh Shoe ..... 21  
Tire bolts ..... 12  
Boiler & Fittings-U bolts 31

## NUTS

H.P. & C.P. Reg. Hvy.  
Square:  
1/2-in. & smaller 15 15  
3/8-in. & 1/2-in. 12 6.5  
1/2-in.-1 1/2-in. 9 1  
1 1/2-in. & larger 7.5 1  
H.P. Hex.:  
1/2-in. & smaller 26 22  
3/8-in. & 1/2-in. 16.5 6.5  
1/2-in.-1 1/2-in. 12 2  
1 1/2-in. & larger 8.5 2  
C.P. Hex.:  
1/2-in. & smaller 26 22  
3/8-in. & 1/2-in. 23 17.5  
1/2-in. & 1 1/2-in. 19.5 12  
1 1/2-in. & larger 12 6.5

## SEMI-FINISHED NUTS

American Standard  
(Per cent off list for less than case or keg quantities)  
Reg. Hvy.  
1/2-in. & smaller 35 28.5  
3/8-in. & 1/2-in. 29.5 22  
1/2-in.-1 1/2-in. 24 15  
1 1/2-in. & larger 13 8.5  
Light  
1/2-in. & smaller ..... 35  
1/2-in. to 1 1/2-in. .... 28.5  
3/4-in. to 1 1/2-in. .... 26

## STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)  
Plain finish ..... 48 & 10  
Plated finishes .... 31 & 10

## HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)  
6 in. or shorter:  
3/8-in. & smaller .... 42  
1/2-in. through 1 in. 34  
Longer than 6 in.:  
3/8-in. & smaller ..... 26  
1/2-in. through 1 in. 4  
3/4-in. through 1 in. 4

## SQUARE HEAD SET SCREWS

(Packaged; per cent off list)  
1 in. diam. x 6 in. and shorter ..... 38  
1 in. and smaller diam. x over 6 in. .... 26

## HEADLESS SET SCREWS

(Packaged; per cent off list)  
No. 10 and smaller.... 35  
1/2-in. diam. & larger . 16  
N.F. thread, all diams. 10

## RIVETS

F.o.b. midwestern plants  
Structural 1/2-in., larger 7.85c  
1/8-in. under ..... 36 off

## WASHERS, WROUGHT

F.o.b. shipping point, to jobbers  
.. List to list-plus-\$1.

## FLUORSPAR

Metallurgical grade, f. o. b. shipping point, in Ill., Ky., net tons, carloads, effective CaF<sub>2</sub> content, 70%, \$43; 60%, \$40.  
Imported, net ton, duty paid, metallurgical grade, \$33-\$35.

## ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

Inches	Length	Cents per lb
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95

## CARBON

35, 40	110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
17 to 20	34, 90	8.03

## STAINLESS STEEL

Type	Sheets	C.R. Strip
301...	41.00	34.00
302...	41.25	36.75
303...	43.25	40.25
304...	43.25	38.75
309...	56.00	55.00
316...	57.00	59.00
321...	49.25	48.25
347...	53.75	52.25
416...	36.50	30.50
420...	37.00	37.00
430...	44.00	47.00
440...	39.00	31.00
501...	27.50	26.00
502...	28.50	27.00

Balt., Types 301-347 sheet, quotes slight variations on Types 301-347.  
Bridgeville, Pa., bars, wire, except 303 and 309 E2.  
Brackenridge, Pa., Sheets A4 sheets & strip U4.  
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.  
Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 and 0.25c lower on Types 302, 304, 321, 347; 0.50c lower on Types 309 and 316 S18.  
Cleveland, strip A7.  
Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.  
Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.  
Duquesne, Pa., bars U5.  
Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.  
Gary, Ind., sheets except Type 416 U5.  
Harrison, N. J., strip and wire C18.  
Massillon, O., all items, R2.  
McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 & 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 43.75c on 316, 36.75c on 321, 41.25c on 347 F2.  
McKeesport, Pa., bars, sheets except Type 416 U5.  
Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.  
Midland, sheets & strip C18.  
Munhall, Pa., bars U5.  
Pittsburgh, sheets C18.  
Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.  
Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.  
So. Chicago, Ill., bars & structurals U5.  
Syracuse, N. Y., bars, wire & structurals C18.  
Titusville, Pa., bars, U4.  
Wallingford, Conn., strip, W2 quotes 0.25c higher.  
Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.  
Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.  
Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.  
Waukegan, bars & wire A7.  
West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.  
Youngstown, strip, except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301.

## COAL CHEMICALS

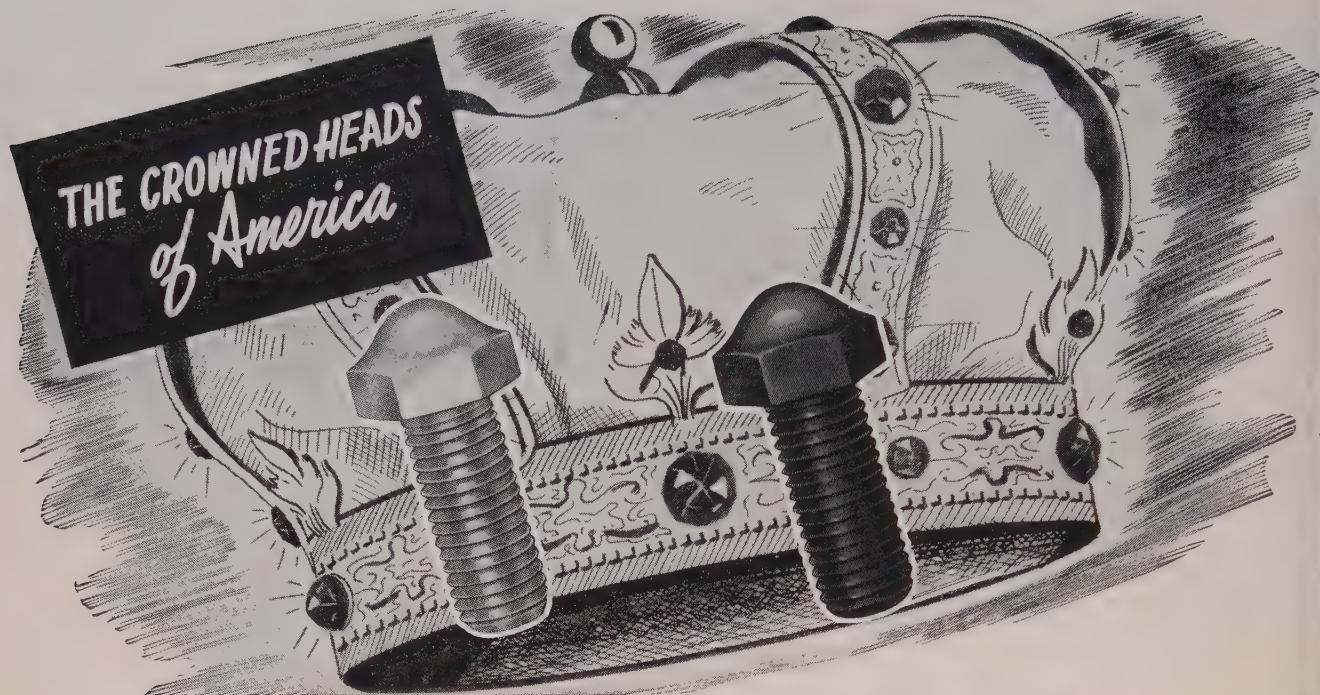
Spot, cents per gallon,ovens  
Pure benzol .... 30.00-35.00  
Toluol, one deg. .... 26.00-33.00  
Industrial xylol .... 25.00-33.50  
Per ton bulk,ovens  
Sulphate of ammonia, \$32-\$45  
Cents per pound,ovens  
Phenol, 40 (carlots, non-returnable drums) .. 17.25

## METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge iron	Cents
98+ % Fe, carlots..	17.00
Swedish, c.i.f. New York, in bags	.85-9.95
Electrolytic Iron:	
Annealed, 99.5% Fe.	42.50
Unannealed, 99 + % Fe	36.50
Unannealed, 99 + % Fe (minus 325 mesh)	58.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns	.83-0.148.00
Aluminum:	
Carlots, freight allowed	29.50
Atomized, 500 lb drums, freight allowed	33.50
Antimony	75.85
Brass, 10-ton lots	30.00-33.25
Bronze, 10-ton lots	51.25-60.00
Phosphor-Copper, 10 ton lots	50.00
Copper:	
Electrolytic	37.25-46.25
Reduced	33.75-37.00
Lead	25.50
Magnesium	75.00-85.00
Manganese:	
Minus 100-mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver, 10-ton lots	45.00
Silicon	38.50
Solder (plus cost of metal)	8.50
Stainless Steel, 302	83.00
Zinc, 10-ton lots	23.00-30.50
Tungsten	Dollars
Melting grade, 99%, 60 to 200 mesh, freight allowed:	
1000 lb and over	6.00
Less than 1000 lb	6.15
98.8% minus 65 mesh, freight allowed:	
1000 lb and over	4.15
Less than 1000 lb	4.25
Molybdenum:	
99.9%, minus 200 mesh	3.25
Chromium, electrolytic 99% Cr min.	3.50
METALLURGICAL COKE	
Price per net ton	
BEEHIVE OVENS	
Connellsville, fur.	\$14.50-15.00
Connellsville, fdry.	17.00-18.00
New River foundry	21.30
Wise county, foundry	15.95
Wise county, furnace	15.20
OVEN FOUNDRY COKE	
Keary, N. J.,ovens.	\$22.75
Everett, Mass.,ovens	..
New England, del.	24.80
Chicago,ovens	23.00
Chicago, del	24.50
Terre Haute,ovens	22.50
Milwaukee,ovens	23.75
Indianapolis,ovens	22.75
Chicago, del	26.42
Cincinnati, del	25.85
Detroit, del	26.85
Ironton, O.,ovens	22.50
Cincinnati, del	25.12
Painesville, O.,ovens	24.00
Cleveland, del	25.82
Erie, Pa.,ovens	23.50
Birmingham,ovens	20.30
Birmingham, del	21.60
Philadelphia,ovens	22.70
NevilleIsland,Pa.,ovens	23.00
Swedeland, Pa.,ovens	22.60
St. Louis,ovens	..
St. Louis, del	25.40
Portsmouth, O.,ovens	22.50
Cincinnati, del	25.12
Detroit,ovens	24.00
Detroit, del	25.00
Buffalo, del	26.89
Flint, del	26.59
Pontiac, del	25.47
Saginaw, del	26.92

\* Or within \$4.15 freight zone from works.



# SHINYCROWNS

## THE KING OF HEX HEADS

*A Crowning Achievement in Cap Screw Design*

### FOR GENERAL USE

**SHINYCROWNS** give that "New Look" to assembly where appearance, ultra-quality, and sales interest are paramount. For that "finishing touch" to your assembly, specify **SHINYCROWNS**, the last word in ornamental Hexagon Head design.

**SHINYCROWNS** are furnished in C-1018 steel, in sizes  $\frac{1}{4}$ " diameter through  $\frac{1}{2}$ " diameter inclusive, in both coarse and fine threads, in plain, zinc, cadmium, nickel, or chrome plate. Price governed by quantity desired—bulk shipments only.

**SPECIAL NOTE:** Also furnished with polished crown to secure highest possible luster, mirror finish.

### FOR SPECIAL USE

**SHINYCROWNS - HexHard** have that "New Look" appearance with the added features of hard Hexagon Heads and soft, tough threads obtained by a special heat treatment—for use where tightening and loosening for adjustment purposes is necessary.

**SHINYCROWNS - HexHard** are furnished in special heat treating material to secure the above features, in standard sizes  $\frac{1}{4}$ " diameter through  $\frac{1}{2}$ " diameter inclusive, in both coarse and fine threads, in plain, zinc, cadmium, nickel, or chrome plate. Price governed by quantity desired—bulk shipments only.

**SPECIAL NOTE:** Also furnished in  $\frac{3}{8}$ " diameter special 20 thread where specified.

**SHINYCROWNS - HexHard** with hard Hexagon Heads are recommended to eliminate poor wrench fit resulting in rounded corners from constant adjustment.

*Complete Information and Samples furnished on request.*

**The FERRY CAP & SET SCREW Co.**  
2159 SCRANTON ROAD • • • • CLEVELAND 13, OHIO

*Pioneers and Recognized Specialists Cold Upset Screw Products since 1907*

CAP AND SET SCREWS • CONNECTING ROD BOLTS • MAIN BEARING BOLTS • SPRING BOLTS AND SHACKLE BOLTS • HARDENED AND GROUND BOLTS  
SPECIAL ALLOY STEEL SCREWS • VALVE TAPPET ADJUSTING SCREWS • AIRCRAFT ENGINE STUDS • ALLOY STEEL AND COMMERCIAL STUDS • FERRY PATENTED ACORN NUTS

## WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS		H.R. Alloy 4140 <sup>8</sup>	Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.			Carbon	Floor
New York (city)	6.27	7.29	8.44	6.59	6.40	6.42	7.29	9.25	6.40	6.58	8.04
New York (c'try)	5.97	6.99	8.14	6.29	6.10	6.12	6.99	8.95	6.10	6.28	7.74
Boston (city)	6.40	7.20	8.49	6.35	6.25	6.25	7.04	9.25	6.40	6.98	7.88
Boston (c'try)	6.20	7.00	8.29	6.15	6.05	6.05	6.84	9.05	6.20	6.78	7.68
Phila. (city)	6.15	7.05	8.25	6.35	6.25	6.30	7.11	8.90	6.15	6.30	7.40
Phila. (c'try)	5.90	6.80	8.00	6.10	6.00	6.05	6.86	8.65	5.90	6.05	7.15
Balt. (city)	5.80	7.04	8.27	6.24	6.14	6.24	7.09	...	6.34	6.00	7.64
Balt. (c'try)	5.60	6.84	8.07	6.04	5.94	6.04	6.89	...	6.14	5.80	7.44
Norfolk, Va.	6.50	...	...	6.70	6.60	6.55	7.70	...	6.60	6.50	8.00
Richmond, Va.	5.90	...	8.10	6.10	6.00	6.10	6.90	...	6.30	6.05	7.80
Wash. (w'hse)	6.02	7.26	8.49	6.46	6.36	6.46	7.26	...	6.56	6.22	7.86
Buffalo (del.)	5.80	6.60	8.29	6.06	5.96	5.80	6.65	10.65†‡§	6.00	6.25	7.55
Buffalo (w'hse)	5.60	6.40	8.09	5.86	5.76	5.60	6.45	10.45†‡§	5.80	6.05	7.35
Pitts. (w'hse)	5.60	6.40*	7.75	5.65-5.95	6.90	5.55	6.40	10.10†‡	5.70	5.75	7.00
Detroit (w'hse)	5.45-5.78	6.53-6.80	7.99	5.94-5.95	7.75	5.84	6.56	8.91	6.09	6.19-6.35	7.28
Cleveland (del.)	5.80	6.60	8.30	5.89	5.79	5.77	6.60-6.70	8.91	10.02	6.12	7.82
Cleve. (w'hse)	5.60	6.40	8.10	5.69	5.59	5.57	6.40-6.50	8.71	5.82	5.92	7.12
Cincin. (city)	6.02	6.59	7.34	5.95	5.85	5.95	6.51	...	6.24	6.34	7.50
Chicago (city)	5.80	6.60	7.95	5.75	5.65	5.75	6.50	10.30	5.90	6.00	7.20
Chicago (w'hse)	5.60	6.40	7.75	5.55	5.45	5.55	6.30	10.10	5.70	5.80	7.00
Milwau. (city)	5.94	6.74	8.09	5.89	5.79	5.89	6.74	10.44	6.04	6.14	7.34
Milwau. (c'try)	5.74	6.54	7.89	5.69	5.59	5.69	6.54	10.24	5.84	5.94	7.14
St. Louis (del.)	6.05	6.85	8.20	6.00	5.90	6.00	6.85	10.55	6.23	6.33	7.53
St. L. (w'hse)	5.85	6.65	8.00	5.80	5.70	5.80	6.65	10.35	6.03	6.13	7.33
Kans. City (city)	6.40	7.20	8.40	6.35	6.25	6.35	7.20	...	6.50	6.60	7.80
Kans. City (w'hse)	6.20	7.00	8.20	6.15	6.05	6.15	7.00	...	6.30	6.40	7.60
Birm'hm (city)	5.75	6.55	6.90 <sup>2</sup>	5.70	5.60	5.70	7.53	...	5.85	6.10	8.25
Birm'hm (w'hse)	5.60	6.40	6.75 <sup>2</sup>	5.55	5.45	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city)	6.55	8.10	9.05 <sup>3</sup>	6.60	6.50	6.55	7.75	...	6.55	6.60	9.20
L. A. (w'hse)	6.35	7.90	8.85 <sup>3</sup>	6.40	6.30	6.35	7.55	...	6.35	6.40	8.70
Seattle-Tacoma	6.65	7.80 <sup>4</sup>	8.90 <sup>3</sup>	6.60	6.50	6.45	8.20	...	6.45	6.50	8.60
San Francisco	7.05	8.60 <sup>3</sup>	9.20 <sup>3</sup>	7.30	7.20	6.75	9.10	11.15	6.65	6.75	8.80

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; ¶ as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; <sup>2</sup>—500 to 1499 lb; <sup>3</sup>—450 to 1499 lb; <sup>4</sup>—3500 lb and over; <sup>5</sup>—1000 to 1999 lb.

## Ores

## Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports.  
After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Old range bessemer	\$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

## Eastern Local Ore

Cents per unit, del. E Pa.

Foundry and basic 56-62% concentrates	17.00
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## Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%	
Spot	17.00
Long-term contract	15.00
North African hematites	17.00
Brazilian iron ore, 68-69%	24.00-25.00

## Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	\$65.00
Domestic scheelite, mines	65.00

## Manganese Ore

Manganese, 48% nearby, \$1.18-\$1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 79.8-81.6c.

## Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

## Indian and African

48% 2.8:1	\$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00

## South African Transvaal

44% no ratio	\$27.00-28.00
48% no ratio	34.00-35.00

## Brazilian

44% 2.5:1 lump	\$32.00
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## Rhodesian

45% no ratio	\$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00

Domestic—rail nearest seller

48% 3:1	\$39.00
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## Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	\$1.00
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## CHROMIUM ALLOYS

**High-Carbon Ferrochrome:** Contract, c.l., lump, bulk 21.75c per lb of contained Cr. c.l., packed 22.65c, ton lot 23.60c, less ton 25.20c. Delivered. Spot, add 0.25c.

**Low-Carbon Ferrochrome:** (Cr 67-72%) Contract, carload, lump, bulk, max. 0.03% C 33.60c per lb of contained Cr, 0.04% C 31.50c, 0.06% C 30.50c, 0.10% C 30.00c, 0.15% C 29.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% C 29.00c, 1.50% C 28.85c, 2% C 28.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

**Foundry Ferrochrome, High Carbon:** (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 23.25c per lb of contained Cr. C.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

**Foundry Ferrochrome, Low Carbon:** (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 16.35c per lb of alloy; ton lot 17.2c; less ton lot, 18.4c, delivered; spot, add 0.25c.

**Low-Carbon Ferrochrome Silicon:** (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 21.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

**Ferrochrome Silicon, No. 2:** (Cr 36-39%, Si 36-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

**Chromium Metal:** (Min. 97% Cr and 1% Fe) Contract carload, 1" x D; packed, max 0.50% C grade, \$1.08 per lb of contained chromium ton lot \$1.10, less ton \$1.12. Delivered. Spot add 5c.

## SILICON ALLOYS

**25-30% Ferrosilicon:** Contract, carload, lump, bulk, 20.00c per lb of contained Si; packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

**50% Ferrosilicon:** Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

**Low-Aluminum 50% Ferrosilicon:** (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

**75% Ferrosilicon:** Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

Note: Current prices on zirconium, calcium and briquetted alloys appeared on page 111, Oct. 29 issue; manganese, titanium and "other" ferroalloys, page 169, Nov. 5. Refractories prices were published on page 111, Oct. 29.

**Low-Aluminum 85% Ferrosilicon:** (Al 0.50% max.) Add 0.7c to 85% ferrosilicon prices.

**90-95% Ferrosilicon:** Contract, carload, lump, bulk, 17.5c per lb of contained Si, carload packed 18.7c, ton lot 19.65c, less ton 20.7c. Delivered. Spot, add 0.25c.

**Silicon Metal:** (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 20.0c per lb of Si, c.l. packed 21.2c, ton lot 22.1c, less ton 23.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

**Alsiifer:** (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

## VANADIUM ALLOYS

**Ferrovanadium:** Open-hearth Grade (V 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, \$3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max., C 0.5-1% max.), \$3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max., C 0.20% max.) \$3.30.

**Grainal:** Vanadium Grainal No. 1, \$1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

**Vanadium Oxide:** Contract, less carload lots \$1.28 per lb contained V<sub>2</sub>O<sub>5</sub>, freight allowed. Spot, add 5c.

## BORON ALLOYS

**Ferroboration:** (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, \$1.20 per lb of alloy. Less than 100 lb \$1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) \$1.20; Grade C (19% min. B) \$1.50.

**Borosis:** (3 to 4% B, 40 to 45% Si), \$5.25 per lb contained B, delivered to destination.

**Bortam:** (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

**Carbortam:** (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

## TUNGSTEN ALLOYS\*

**Ferrotungsten:** (70-80%), 10,000 lb W or more, \$5.00 per lb of contained W; 20,000 lb W to 10,000 lb W, \$5.10; less than 2000 lb W, \$5.22.

**Tungsten Powder:** Carbon Reduced; (W 98.8% min.) 1000 lb or more, \$6.00 per lb of contained W; less than 1000 lb W, \$6.15.

\*Government ceiling prices, effective May 7, 1951, f.o.b. Niagara Falls, N. Y., basis.

## CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Oct. 23, 1951

STEELMAKING SCRAP  
COMPOSITE

Nov. 8 .....	\$43.00
Nov. 1 .....	43.00
Oct. 1951 .....	43.60
Nov. 1950 .....	41.33
Nov. 1946 .....	22.22

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Grade 1	No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Basing Point		
Alabama City, Ala.	\$39.00	\$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minneapolis, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburgh, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

## Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

## O-H and Blast Furnace Grades

2. No. 1 Busheling .....	Base
3. No. 1 Heavy Melting...	-\$1.00
4. No. 2 Heavy Melting...	- 1.00
5. No. 2 Bundles .....	- 1.00
6. Machine Shop Turnings	-10.00
7. Mixed Boring & Short Turnings .....	- 6.00
8. Shoveling Turnings .....	- 6.00
9. No. 2 Busheling .....	- 4.00
10. Cast Iron Borings .....	- 6.00

## Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops .....	+ 7.50
12. Bar Crops & Plate .....	+ 5.00
13. Cast Steel .....	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structural & Plate:	
16. 3 feet and under....	+ 3.00
17. 2 feet and under....	+ 5.00
18. 1 foot and under....	+ 6.00
19. Briquetted Cast Iron Borings .....	Base

## Foundry, Steel:

20. 2 feet and under....	Base
21. 1 foot and under....	+ 2.00

22. Springs and Crankshafts	+ 1.00
23. Alloy Free turnings .....	- 3.00
24. Heavy Turnings .....	- 1.00
25. Briquetted Turnings ..	Base
26. No. 1 Chemical Borings	- 3.00
27. No. 2 Chemical Borings	- 4.00
28. Wrought Iron .....	+10.00
29. Shafting .....	+10.00
30. Hard Steel cut 2 ft & under .....	+ 5.00
31. Old Tin & Terne Plated Bundles .....	-10.00

## Unprepared Grades

When compressed constitutes:	
32. No. 1 Bundles .....	- 6.00
33. No. 2 Bundles .....	- 9.00
34. Other than material suitable for hydraulic compression .....	- 8.00

## Restrictions on Use

- (1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for Grades 12 and 8, respectively.
- (2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.
- (3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.
- (4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and open-hearth furnaces or foundries.
- (5) Prices for Grade 29 may be charged only when sold for forging or rerolling purpose.
- (6) Prices for Grade 30 may be charged only when sold to a gray iron foundry; otherwise price for Grade 20 will prevail.

## Special Pricing Provisions

- (1) Sellers of Grades 26 and 27 may make an extra charge of \$1.50 per ton for loading in box cars, or 75 cents per ton for covering gondola cars with a weather-resistant covering.
- (2) Ceiling price of pit scrap, ladle scrap, salamander scrap, skulls, skimmings or scrap recovered from slag dumps and prepared to charging box size, shall be computed by deducting from the price of No. 1 heavy melting steel of dealer and industrial origin, the following amounts: Where iron content is 85% and over, \$6; 75% and over, \$10; less than 75%, \$12.
- (3) Ceiling price of any inferior grade of scrap not listed shall not exceed the price of No. 1 bundles less \$15.00.

## Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:	
2. No. 2 Heavy melting Steel .....	-\$2.00
3. No. 2 Steel Wheel .....	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling .....	- 3.50
6. No. 1 Turnings .....	- 3.00
7. No. 2 Turnings, Drillings & Borings .....	-12.00
8. No. 2 Cast Steel and uncut wheelcenters .....	- 6.00
9. Uncut Frogs, switches.	Base
10. Flues, Tubes & Pipes .....	- 8.00
11. Structural, Wrought Iron and/or steel, uncut .....	- 6.00
12. Destroyed Steel Cars .....	- 8.00
13. No. 1 Sheet Scrap .....	- 9.50
14. Scrap Rails, Random Lengths .....	+ 2.00
15. Rerolling Rails .....	+ 7.00
16. 3 feet and under ....	+ 5.00

17. 2 feet and under .....	+ 6.00
18. 18 inches and under..	+ 8.00
19. Cast Steel, No. 1 .....	+ 3.00
20. Uncut Tires .....	+ 2.00
21. Cut Tires .....	+ 5.00

## Bolsters &amp; Side Frames:

22. Uncut .....	Base
23. Cut .....	+ 3.00
24. Angle, Splice Bars & Tie Plates .....	+ 5.00
25. Solid Steel Axles .....	+12.00
26. Steel Wheels, No. 3 oversize .....	Base
27. Steel Wheels, No. 3 .....	+ 5.00
28. Spring Steel .....	+ 5.00
29. Couplers & Knuckles .....	+ 5.00
30. Wrought Iron .....	+ 8.00
31. Fireboxes .....	- 8.00
32. Boilers .....	- 6.00
33. No. 2 Sheet Scrap .....	-13.00
34. Carsides, Doors, Car Ends, cut apart .....	- 6.00
35. Unassorted Iron & Steel .....	- 6.00
36. Unprepared scrap, not suitable for hydraulic compression .....	- 8.00

## Restrictions on Use

- (1) Price established for Grade 15 may be charged only when purchased and sold for rerolling uses; otherwise, ceiling shall not exceed that for Grade 14.
- (2) Price established for Grade 30 may be charged only when sold to a producer of wrought iron; otherwise, ceiling shall not exceed that for No. 1 heavy melting steel.
- (3) Price for Grade 25 may be charged only when sold for rerolling and forging purposes; otherwise ceiling shall not exceed that for base grade (No. 1.)

## CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

## Cast Iron:

1. No. 1 (Cupola) .....	\$49.00
2. No. 2 (Charging Box) ..	47.00
3. No. 3 (Hvy. Breakable) ..	45.00
4. No. 4 (Burnt Cast) ..	41.00
5. Cast Iron Brake Shoes ..	41.00
6. Stove Plate .....	46.00
7. Clean Auto Cast .....	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1 .....	47.00
10. Malleable .....	55.00
11. Drop Broken Machinery.	52.00

## Restrictions on Use

- (1) Ceiling shipping point price which a basic open-hearth consumer may pay for No. 1 cast iron, clean auto cast, malleable or drop broken machinery cast shall be ceiling price for No. 2 charging box cast.
- (2) Ceiling shipping point price which any foundry other than a malleable iron producer may pay for Grade 10 shall be ceiling price for No. 1 cast iron.

## Preparation Charges

Ceiling fees per gross ton which may be charged for intramit preparation of any grade of steel scrap of dealer or industrial origin authorized by OPS are:

- (1) For preparing into Grades No. 3, No. 4 or No. 2, \$8.
- (2) For hydraulically compressing Grade No. 1, \$6 per ton; Grade No. 5, \$8.
- (3) For crushing Grade No. 6, \$3.
- (4) For preparing into: Grade No. 25, \$6.
- (5) Grade No. 19, \$6.
- (6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, \$10.
- (7) Grade No. 17 or No. 21, \$11.
- (8) Grade No. 18, \$12.
- (9) For hydraulically compressing Grade No. 15, \$8.
- (10) For preparing into Grade No. 28, \$10.

Ceiling fees per gross ton which may be charged for intramit preparation of any grade of steel scrap of railroad origin shall be:

- (1) For preparing into Grade No. 1 and Grade No. 2, \$8.

- (2) For hydraulically compressing Grade No. 13, \$6.
- For preparing into: Grade No. 16, \$4.
- Grade No. 17, \$5.
- Grade No. 18, \$7.
- Grade No. 21, \$4.
- Grade No. 23, \$4.

Ceiling fees per gross ton which may be charged for intramit preparation of cast iron are limited:

- (1) For preparing Grade No. 1 into grade No. 7, \$9.
- (2) For preparing Grade No. 1 into Grade No. 11, \$7.
- (3) For preparing Grade No. 1 into Grade No. 1, \$4.

Whenever scrap has arrived at point of delivery and consumer engages a dealer to prepare such scrap, no fee may be charged for such services unless consumer obtains prior written OPS approval.

## Commissions

No commission shall be payable to a broker in excess of \$1.

## Premiums for Alloy Content

No premium may be charged for alloy content except: \$1.25 per ton for each 0.25% of nickel which scrap contains not less than 0.5% and not over 5.25% nickel; \$2 per ton for scrap containing not less than 0.15 per cent molybdenum and not over 0.65% molybdenum; for scrap containing not less than 10% manganese, \$4 for scrap in sizes larger than 12 x 24 x 8 in., and \$14 for scrap cut in that size or smaller (applicable only if scrap is sold in electric furnace uses or on NPA location); \$1 for scrap conforming to SAE 52100.

## Switching Charges

Switching charges to be deducted from basing point prices of dealer, industrial and nonoperating railroad scrap, to determine ceiling shipping point prices for scrap originating at basing points are per gross ton: Alabama City, Ala., 43c; Ashland, Ky., 47c; Atlanta, 51c; Bethlehem, Pa., 52c; Birmingham, 50c; Brackenridge, Pa., 53c; Buffalo, 53c; Butler, Pa., 65c; Canton, O., 51c; Chicago (including Gary, Ind.), \$1.34; Cincinnati (including Newport, Ky.), 6c; Claymont, Del. (including Clayton, Pa.), 79c; Cleveland, 76c; Coatesville, Pa., 50c; Conshohocken, Pa., 29c; Detroit, 95c; Duluth, Minn., 50c; Harrisburg, Pa., 51c; Houston, 70c; Johnstown, Pa., 75c; Kansas City, Mo., 78c; Kokomo, Ind., 51c; Middletown, O., 26c; Midland, Pa., 75c; Minneapolis, Colo., 33c; Monessen, Pa., 51c; Phoenixville, Pa., 51c; Pittsburgh, Calif., 65c; Pittsburgh (including Bessemer, Homestead, Duquesne, Munhall), 99c; Portland, Oreg., 52c; Portsmouth, O., 51c; St. Louis (including Federal, Grand City, E. St. Louis, Madison, I., 51c; San Francisco (including San Francisco, Niles, Oakland, 66c; Seattle, 59c; Sharon, 75c; Sparrows Point, Md., Steubenville, O., 51c; Warren, Pa., 75c; Weirton, 70c; Youngstown, 75c.

## HAMILTON, ONT.

(Delivered Prices)

Heavy Melt .....	\$38.00
No. 1 Bundles .....	38.00
No. 2 Bundles .....	38.00
Mechanical Bundles ..	38.00
Mixed Steel Scrap .....	38.00
Mixed Borings, Turnings	38.00
Rails, Remelting .....	38.00
Rails, Rerolling .....	38.00
Busheling .....	38.00
Bushelings new factory:	
Prep'd. ....	38.00
Unprep'd. ....	38.00
Short Steel Turnings ..	38.00
Cast Iron Grades*	38.00
No. 1 Machinery Cast...	38.00

\* F.o.b. shipping point.

# The Metal Market

## National Production Authority acts to increase flow of aluminum, copper and lead scrap to secondary smelters. Shortages will extend through second quarter of 1952

EFFORTS to augment supplies of nonferrous metals, especially aluminum, copper and lead, are being intensified. Production of these strategic materials could be raised if more scrap were available and vigorous action is being taken to increase shipments.

National Production Authority took action last week to divert the flow of aluminum scrap from primary producers to secondary smelters. The amounts of tolled and purchased scrap and secondary ingot which primary producers may receive during the fourth quarter of 1951 are limited to individual ceilings, based on each company's historical use of aluminum scrap. As a result of this directive, a minimum of about 5.5 million pounds of scrap aluminum will be diverted each month from primary producers to secondary smelters.

Supply of red metal scrap will not be sufficient to meet defense program needs in the first quarter of 1952, NPA officials forecast. To obtain scrap needed in the immediate future, NPA proposes the release of government-owned scrap, a joint compliance survey by NPA and OPS, acceleration of the industrial scrap program and reduction of the inventory period from 60 days to 30 days.

**Violations Numerous**—More than 100 cases where dealer inventories of copper scrap are in excess of the 60-day limitation have been discovered, NPA said. Dealers are warned that they will be prosecuted for willful violation of the inventory limitation.

Refined copper production from scrap by custom smelters dropped in October from the normal 10,000 tons a month to 1680 tons, NPA said. Brass and bronze ingot production also dropped from about 35,000 tons a month to 22,000 tons in September.

A program to put lead scrap under allocation is being studied by NPA and will be made effective "as soon as possible." The allocation program, which has covered domestically produced soft primary lead since Sept. 1, will be extended to lead imports. December allocations are expected to be issued late this month.

Because demand for lead far exceeds supply, NPA has been forced to reduce the amounts of lead made available to all users, including storage battery manufacturers, the electric cable, paint and tetraethyl lead industries. Supplies of primary lead are short, principally because imports of concentrates have been curtailed and scrap lead supplies are inadequate. About 75 per cent of lead scrap comes from batteries. Although production of battery plates is normal, some smelters using this form of scrap are not getting one-tenth of their normal supply. NPA may issue a regulation to direct the movement of battery plate scrap from the

dealer to the user along normal historical trade lines.



COPPER SCRAP BALERS

... urgently need more material

## Magnesium Group To Meet

Seventh annual meeting of Magnesium Association, to be held in the Biltmore Hotel, New York, Nov. 15-16, will feature an industry display of civilian and military product applications of the world's lightest structural metal. A. W. Winston, Dow Chemical Co., Midland, Mich., is president of the association.

## Rolled Zinc Output Rises

Production of rolled zinc increased in 1950 to 70,075 tons, valued at \$28,368,498, from 57,987 tons, valued at \$20,144,422, in 1949. Output of all rolled zinc items increased during the year. Strip and ribbon zinc production increased to 49,167 tons from 41,354 tons; sheet zinc, not over 0.1 inch thick, to 18,436 tons from 14,710 tons. Of the 70,075 tons of rolled zinc produced, 70 per cent was in the form of strip and ribbon zinc and 26 per cent as sheet zinc not over 0.1 inch thick.

The quantity of slab zinc consumed for rolled zinc products in 1950 increased 24 per cent from the 1949 figure, reports the Bureau of Mines. The total value of the rolled products, however, gained 41 per cent as the average price rose from 17.4 cents in 1949 to 20.2 cents in 1950.

Zinc rolling mills consumed 68,444 tons of slab zinc and 4516 tons of

purchased zinc scrap in 1950 compared with 55,200 tons and 3802 tons, respectively, in 1949. In addition, 13,841 tons of strip and ribbon zinc were remelted and rerolled from scrap originating in fabricating plants operating in connection with zinc rolling mills.

## New Mineral Discovered

A new mineral, previously unknown to science, has been found in Nevada and named "robinsonite" in honor of Dr. S. C. Robinson, Queen's University, Kingston, Ont. The discovery was made by Edgar H. Bailey of the Geological Survey, Department of Interior, while investigating quick-silver deposits at the Red Bird mine, Pershing county, Nevada. X-ray pictures show the mineral contains the typical pattern of boulangerite and a lead-antimony sulfide. The hardness, color and luster are the same as those for boulangerite. There are only about 1600 well-defined species of minerals.

## Plans To Cast Magnesium

American Radiator & Standard Sanitary Corp., New York, is going to use its North Side Pittsburgh plant for production of magnesium castings for defense purposes. The company had closed the plant last month in anticipation of its conversion to production of enameled sinks.

## Aluminum Capacity Climbs

Continuing progress in the aluminum industry's current expansion program was reported by producers at the recent meeting of the Aluminum Association in New York. The reports confirmed expectations that by the end of 1952 the nation's primary aluminum capacity will be about 60 per cent greater than the 1950 level and that additional capacity is scheduled to go into operation in 1953. The meeting brought together top executives of all primary aluminum producers and about 85 per cent of the nation's semi-fabricators of this strategic metal.

A. P. Cochran, Cochran Foil Co. Inc., Louisville, is president of the Association.

Production of primary aluminum continued to rise in August, totaling 73,816 tons compared with 72,698 tons in July and 63,006 tons in August, 1950. Power shortages in the Pacific northwest forced curtailment of operations in September. Increases in July and August resulted from expansion and reactivation programs within the industry and further production advances could be expected if sufficient power to produce the metal were available at all times, says Donald M. White, secretary, Aluminum Association, New York.

Aluminum sheet and plate shipped by member companies of the Association totaled 91,888,728 pounds during August, a decrease of 1,882,350 pounds from the July total, while shipments of foil increased nearly 1 million pounds.

## NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

## Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5 (No. 115) 27.25c; 88-10-2 (No. 215) 38.50c; 80-10-10 (No. 305) 32.25c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 19.50c; brass special 19.75c; intermediate 20.00c, East St. Louis; high grade 20.85c, delivered.

Lead: Common 18.80c; chemical 18.90c; cor-rodium 18.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.00c; grade 2, 17.75c; grade 3, 17.25c; grade 4, 16.50c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 103.00.

Antimony: American 99-99.8% and over but not meeting specifications below 42.00c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 42.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, \$220-\$222 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, \$1.50 per lb of alloy, f.o.b., Reading, Pa.

Cadmium: "Regular" straight or flat forms, \$2.55 del.; special or patented shapes \$2.80.

Cobalt: 97.99%, \$2.40 per lb for 500 lb (kegs); \$2.42 per lb for 100 lb (case); \$2.47 per lb under 100 lb.

Gold: U. S. Treasury, \$35 per ounce.

Silver: Open market, New York 88.00c per oz.

Platinum: \$90-\$93 per ounce from refineries.

Palladium: \$24 per troy ounce.

Iridium: \$200 per troy ounce.

Titanium (sponge form): \$5 per pound.

## Rolled, Drawn, Extruded Products

## COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill; effective Aug. 23, 1951)

Sheet: Copper 41.68; yellow brass 38.28; commercial bronze, 95% 41.61; 90% 41.13; red brass, 85% 40.14; 80% 39.67; best quality, 39.15; nickel silver, 18%, 53.14; phosphor-bronze grade A, 5%, 61.07.

Rod: Copper, hot-rolled 37.53; cold-drawn 38.78; yellow brass free cutting, 32.63; commercial bronze, 95%, 41.30; 90% 40.82; red brass 85%, 39.83; 80%, 39.36.

Seamless Tubing: Copper 41.72; yellow brass 41.29; commercial bronze, 90%, 43.79; red brass, 85% 43.05.

Wire: Yellow brass 38.57; commercial bronze, 95%, 41.90; 90%, 41.42; red brass, 85%, 40.43; 80%, 39.96; best quality brass, 39.44.

(Base prices, effective Nov. 6, 1950)

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 28.67-30.42; l.c.l. 29.17-30.92; 100,000 lb lots 28.545-39.295; weatherproof, f.o.b. eastern mills, c.l. 29.60-30.60, l.c.l. 30.10-31.10, 100,000 lb lots 29.35-30.35; magnet, del., 15,000 lb or more 34.50c, l.c.l. 35.25.

## DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
1951								
Nov. 1-8	24.50	18.80	19.50	103.00	19.00	42.00	56.50	88.00
Oct. 5-31	24.50	18.80	19.50	103.00	19.00	42.00	56.50	88.00
Oct. 4	24.50	18.80	19.50	103.00	19.00	42.00	56.50	84.75
Oct. 2-3	24.50	18.80	19.50	103.00	19.00	42.00	56.50	90.16
Oct. 1	24.50	18.80	17.50	103.00	19.00	42.00	56.50	90.16
Oct. Avg.	24.50	18.726	19.426	103.00	19.00	42.00	56.50	88.12
Sept. Avg.	24.50	16.80	17.50	103.00	19.00	42.00	56.50	90.16
Aug. Avg.	24.50	16.80	17.50	103.00	19.00	42.00	56.50	90.16
July Avg.	24.50	16.80	17.50	106.00	19.00	42.00	56.50	90.16
June Avg.	24.50	16.80	17.50	117.962	19.00	42.00	56.50	88.492
May Avg.	24.50	16.80	17.50	139.923	19.00	42.00	50.50	90.16
Apr. Avg.	24.50	16.80	17.50	145.735	19.00	42.00	50.50	90.16
Mar. Avg.	24.50	16.80	17.50	145.730	19.00	42.00	50.50	90.16

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

## ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

\* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	Round— R317-T4, 17S-T4	Hexagonal— R317-T4 17S-T4
0.125	52.0	...
0.156-0.0188	44.0	...
0.219-0.313	41.5	...
0.375	40.0	46.0
0.406	40.0	...
0.438	40.0	46.0
0.469	40.0	...
0.500	40.0	46.0
0.531	40.0	...
0.563	40.0	45.0
0.594	40.0	...
0.625	40.0	43.5
0.688	40.0	...
0.750-1.000	39.0	41.0
1.063	39.0	...
1.125-1.500	37.5	39.5
1.563	37.0	...
1.625	36.5	39.5
1.688-2.000	36.5	...

## LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more \$24.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils \$24.00 per cwt. Traps and bends: List prices plus 80%.

## ZINC

Sheets, 26.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 25.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 24.50-26.50c; over 12-in., 24.50-26.50c.

## "A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

## MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

## MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

## TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, \$15; sheared mill plate, \$12; strip, \$15; wire, \$10; forgings, \$6; hot-rolled and forged bars, \$6.

## Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c. Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, cast loads, 74.50c; 10,000 to 30,000 lb, 75.50c; 30,000 to 10,000 lb, 76.50c, 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c, f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 400 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 400 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 77.7c; 100 or 350 lb drums only, 100 to 600 lb, 63.1c; 700 to 1900 lb, 60.6c; 2000 to 9900 lb, 58.9c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, \$1.19; 500 to 999 lb, \$1.195; 200 to 499 lb, \$1.20; less than 200 lb, \$1.215. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Zinc Cyanide: 100 lb drums, less than 100 lb drums 47.7c, 10 or more drums, 45.7c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bags less than 2000 lb \$1.0009; more than 2000 lb 98.09c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bags 87.23c; 100 lb kegs 88.23c. Freight allowed.

## Scrap Metals

## Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective July 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	20.75
Phos. bronze, 5%	25.25	25.00	24.00

## Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group I: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material.

Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

## Zinc Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment)

Unswaged zinc dross, 13.75c; new clippings and trimmings, 15.50c; engravers' and lithographers' plates, 15.50c; die cast slabs, 90% zinc, 13.75c; old zinc scrap, 12.25c; foraging and stamping dies, 12.25c; new die cast scrap, 11.75c; old zinc die cast radiator grille 11.50c; old die cast scrap, 10.50c.

## Lead Scrap Ceiling Prices

(F.o.b. point of shipment)

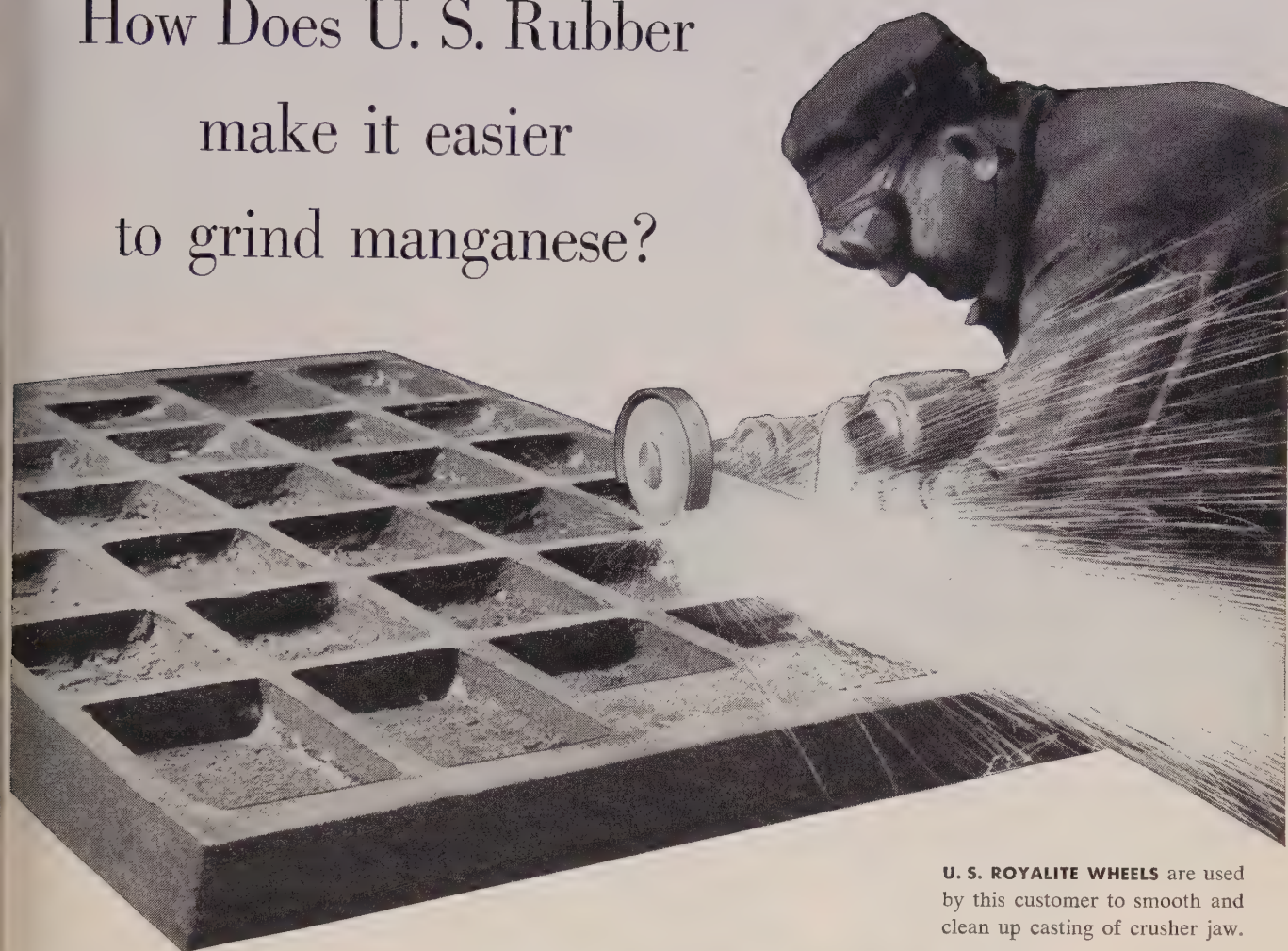
Battery lead plates, 19.00c per lb of lead and antimony content, less smelting charge of cents per lb of material in lots 15,000 lb or more; less 2.25c in lots less than 15,000 lb or a flat price of 11.25c a pound of battery plates. Used storage batteries (in boxes) drained of liquid, 7.65c for 15,000 lb or more; 7.45c for less than 15,000 lb. Soft lead scrap, hard lead scrap, battery slugs, cable lead scrap or lead content of lead-covered cable scrap 17.25c in lots of 20,000 lb or more; 16.50c in lots under 20,000 lb.

## Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free 10.50, high grade borings and turnings, 8.00; No. 12 piston borings and turnings, 7.00; Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00; Obsolete scrap: Pure Al cable, 10.00; sheet and sheet utensils, 7.25; castings and forgings, 7.75; clean pistons, 7.00; of struts, 7.75; pistons with struts, 5.75.

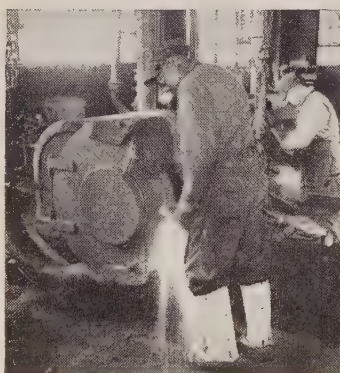
# How Does U. S. Rubber make it easier to grind manganese?



**U. S. ROYALITE WHEELS** are used by this customer to smooth and clean up casting of crusher jaw.

By developing wheels especially designed to be used on manganese, U.S. Rubber technicians make it easier to handle this extremely tough steel.

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**DUST HOOD****Lightweight and Comfortable**

Can be used with any WILLSON single filter respirators for dusts, mists, gases, vapors. Available without respirator.

Wide Vision, acetate windows—33 square inches.

Windows interchangeable, replaced in a matter of seconds.

Canvas hood with snap fasteners on window.

Style 1

Style 2 with No. 46 Respirator

Straps with spring clips to gather hood around body and under arms.

See your WILLSON distributor or write us direct

**WILLSON PRODUCTS, INC., 233 Washington Street, Reading, Pa.**

Dependable Products Since 1870

**Steel Bars . . .**

Bar Prices, Page 145

**Detroit**—Improvement in delivery is reported by some automotive consumers of alloy bars. In one instance bars promised for mid-December delivery are now expected a month earlier. Shortage of bars, however, continues the major worry of automakers, excluding copper.

**New York**—Despite nullification by NPA of the first-come-first-served order the day before its effective date, Nov. 2, bar producers experienced a flurry of demand for January.

**Cleveland**—Elimination of the 10-per cent tonnage set-aside for first-come first-served customers in the last 15 days of the lead period for January bookings came just in time to save bar producers from a flood of orders which they could not possibly handle.

**Chicago**—Outlook for hot-rolled bars has lost some of its tightness in recent weeks as result of lessened demand from the farm equipment industry.

**Sheets, Strip . . .**

Sheet and Strip Prices, Page 145 &amp; 146

**Pittsburgh**—District producers feel that NPA's cancellation of the 10 per cent reserve order so they can now accept up to 100 per cent of their monthly capacity in authorized CME orders on a pick and choose basis is a step in the right direction in that they can better serve their regular customers.

Demand is currently holding up with no signs of weakness noted. Closer approximation of supply and demand is noted in terne and electrical sheets.

**Boston**—Contributing to improvement in narrow cold strip supply is the fact for some weeks producers of hot-rolled have been meeting allocations to converters.

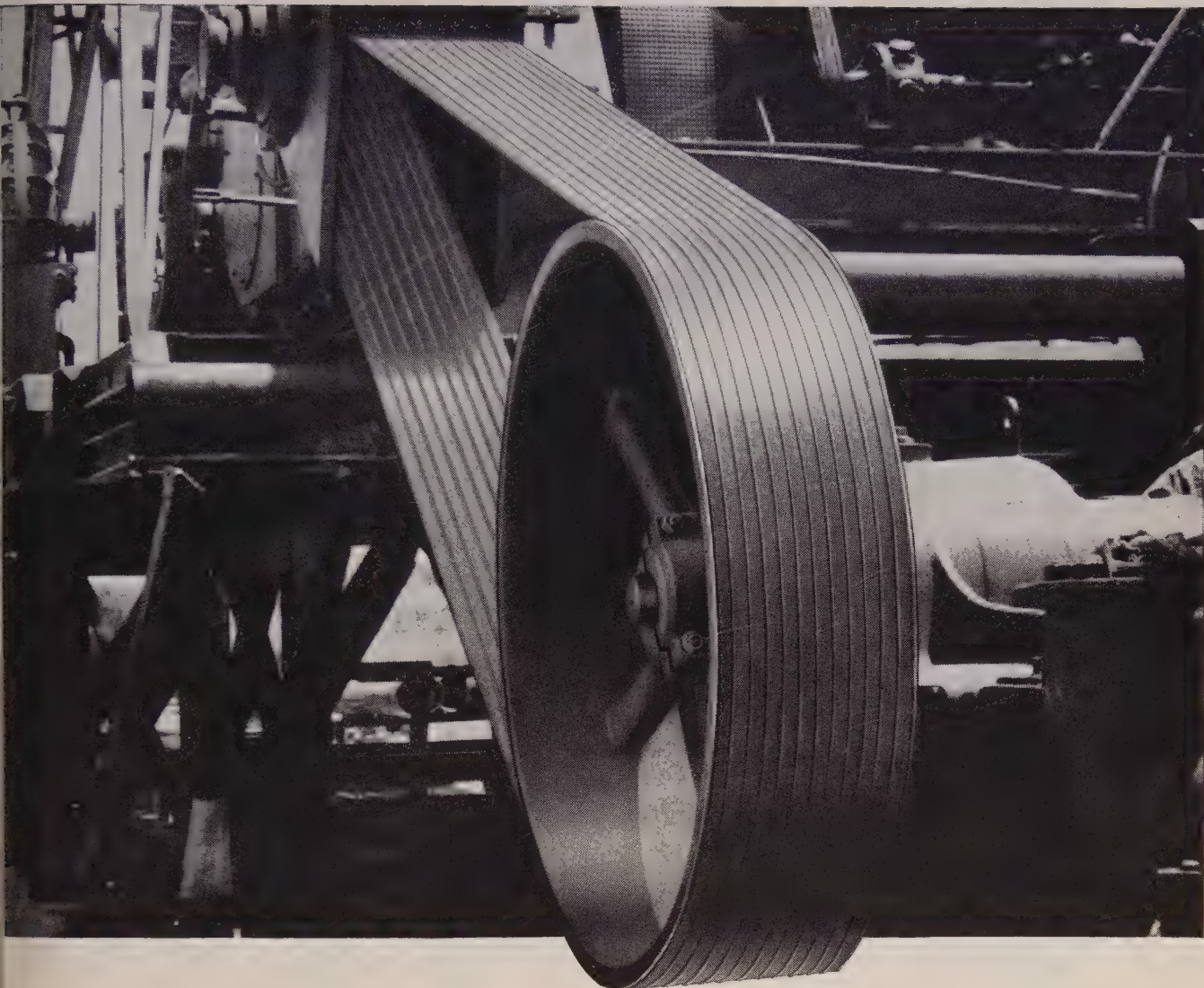
**New York**—Last minute cancellation by the National Production Authority of the amendment calling upon mills to set aside 10 per cent of their January production for buyers coming in on a first-come-first-served basis in the final 15 days before expiration of lead time of a given product, came too late to forestall a flurry in demand.

**Philadelphia**—Sheet consumers fairly deluged producers with orders for January, for acceptance on a first-come-first served basis.

**Cleveland**—Producers have marked up their galvanized sheet prices that reflect the early October increase of 2 cents per pound in zinc. This action had been delayed by OPS pending a 20-day notification period by sellers.

**Detroit**—Some large factors held in conversion are reported attempting to close out their deals. Some middlemen in conversion activities are understood to be unloading at the best price they can get. This is dramatically below the offering price of a few months ago.

**Washington**—Navy purchases of stainless steel sheets have been heavy from at least four producers. Among those booking orders are Eastern Stainless Steel Co., Baltimore, 300 tons, and Allegheny Ludlum Steel Corp., Pittsburgh, 110 tons.



## Next Time You Buy V-Belts Remember:

### **Bull Dog Compounds do not Crack or Deteriorate Under Severe Flexing!**

Bull Dog compounds run cooler and do not crack or deteriorate under severe flexing. This simple fact explains in great part the steady, smooth, *low cost* performance of Bull Dog V-Belts . . . and their longer life! *Remember it — it will pay you well.*

Remember, also, that Bull Dogs are processed for *minimum stretch*. You'll see the operating benefits in reduced slippage and the elimination of repeated adjustments.

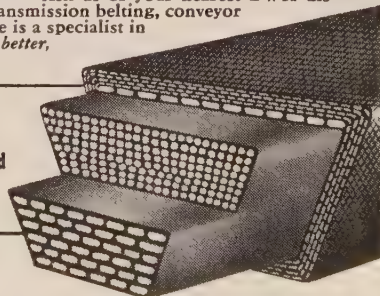
Durable Covers are another "more for your money" advantage — and worth remembering. Bull Dog covers are closely woven of heavy, bias cut fabric. They can with-

stand the punishing wear of the sheave while sealing the belt against moisture, dirt and grease.

Remember, too, that the *specially engineered* BWH cord section is outstanding in high tensile strength. This means you'll get the superior load carrying capacity you want — and the ability to absorb shock loads. What's more, when you install Bull Dogs in sets (and it's highly recommended) you are matching the uniform superiority of one Bull Dog belt with another.

**TOUGH PROBLEMS INVITED** — Ask us or your nearest BWH distributor about your V-belts, transmission belting, conveyor belting and hose problems. He is a specialist in making rubber products work *better, longer.*

**Durable Covers  
Minimum Stretch  
Strong Specially Engineered  
Cord Section  
Takes Heaviest Flexing**



Another Quality Product of

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Warehouse Stock: 111 N. Canal St., Chicago, Illinois

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PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.



## ROUND STRAND



## FLATTENED STRAND

SPECIFY STRONGER  
SAFER "HERCULES"  
FLATTENED STRAND

- 10% extra strength.
- Larger metallic area.
- Smooth wearing.
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- Easier to rig.
- Extra safety
- Extra economy.

• **RED-STRAND**

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# LESCHEN WIRE ROPE

Consult our Engineering Department for specific recommendations. A. LESCHEN & SONS ROPE CO., 5909 Kennerly Ave., St. Louis 12, Missouri. Distributors in all principal cities.

SPREADS THE LOAD  
FOUR WAYS

"Hercules" Flattened Strand design spreads wear over four wires — not just one. This compact outer surface greatly reduces wear in grooves... helps keep them smooth. Triangular cross-section of strands permits smaller core, larger contact area between strands, and greater resistance to crushing. "Hercules" Flattened Strand Wire Rope offers greater strength and economy.

## Plates . . .

Plate Prices, Page 145

**Philadelphia**—Plate producers see no let up to demand in sight. Under new regulations mills will be called upon to open books 45 days ahead of the lead time of a product for an ensuing quarter, although according to some interpretations such opening may not necessarily apply to an entire quarter but may apply on a month to month basis.

**Boston**—Although plate fabricators are seeking to place second quarter volume producers are reluctant to take on much tonnage beyond established defense needs.

**Pittsburgh**—Many fourth quarter CMP tickets are finding no available mill capacity open to them.

## Wire . . .

Wire Prices, Page 147

**Boston**—Demand for heading wire is well maintained with only slight reductions in first quarter allotments.

**Pittsburgh**—United States Steel subsidiaries announced a price rise of approximately ½ cent per pound on galvanized wire products.

**San Francisco**—Columbia Steel Co. advanced prices of galvanized wire products an average of approximately one eighth of a cent a pound. Not affected are wire rope, strand and fish trap nettings which have no sliding scale.

## Tubular Goods . . .

Tubular Goods Prices, Page 149

**Cleveland**—Reflecting the Oct. 2 increase of 2 cents per pound in the price of zinc, producers of galvanized pipe have raised their prices an average of \$1 to \$4 per ton. Some makers had originally announced the increase early in October but later withdrew the new discounts when OMA insisted that a notification period of 20 days be given before adjustments be made. This period expired Nov. 1 for most producers.

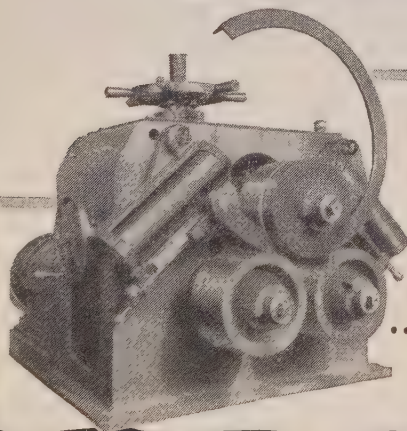
**Pittsburgh**—Due to the recent price increase on zinc, pipe producers have adjusted their discounts on galvanized material which now require consumers to pay \$1 to \$4 a ton more depending on the size ordered.

## Reinforcing Bars . . .

Reinforcing Bar Prices, Page 145

**Cleveland**—Trade interest centered in an offer by a German steel importer to provide steel required for the proposed Ohio turnpike. Request for 72,810 tons of steel for 1952 construction recently were turned down by the NPA. Consequently, the importer's offer is receiving consideration by the Turnpike Commission. The importer, Kurt Orban Co., says it is in position to provide all or a portion of the required tonnage depending on specifications. It can give delivery in two to three months, but prices quoted are above the domestic market.

**Seattle**—Reinforcing bar demand is insistent but rolling mills are accepting only small tonnages which such can be fitted into schedules. Producers' chief efforts are aimed at expediting deliveries.



If you have only  
1 angle to roll,  
you won't need it!

...BUT FOR PRODUCTION  
ROLLING, IT'S A "MUST"

## THOMAS ANGLE-BENDING ROLL

Obviously one, two, six or even sixteen angles won't justify the purchase of this modern Thomas machine. But if your production calls for circles or segments from angles, flats, rounds or other shapes in quantities, the THOMAS ANGLE BENDER may be the solution to your need for greater production at less cost! Write for Bulletin 314.


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17

# THOMAS

MACHINE MANUFACTURING COMPANY

PITTSBURGH, 23, PA.



# 43,000 more in '51!

**T**HE petroleum industry is aiming at 43,000 new wells for 1951 in order to meet the government's goal of 7¼ million barrels of oil a day.

This requires immense quantities of steel—for derricks, drills, buildings and tanks—and is in addition to the needs of western manufacturers of essential civilian products.

The fulfillment of these requirements has been aided by Kaiser Steel's constant expansion of facilities. With this result: Kaiser Steel's capacity has now reached 1,380,000 ingot tons annually. More than *double* the amount produced in 1944—the peak war year!

More evidence that the West Coast's only integrated, *independent* steel plant is helping to build a stronger West ... and a stronger nation!

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# Kaiser Steel

*built to serve the West*

**PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES •** plates  
continuous weld pipe • electric weld pipe • hot rolled strip • hot rolled  
sheet • alloy bars • carbon bars • structural shapes • cold rolled strip  
cold rolled sheet • special bar sections • semi-finished steels • pig iron  
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HAVE YOU  
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THIS NEW  
METAL CLEANER?

IT CAN  
SAVE MONEY  
FOR YOU

New metal  
cleaner  
removes  
oil and rust  
in one  
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It also prevents scale and  
slag from forming  
during the  
melting process.

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## Oakite Compound No. 33

### REMOVES OIL

*at the same time that it*

### REMOVES RUST...

*And at the same time it  
prepares the metal  
for painting*

Oakite Compound No. 33 is a great soak cleaner for steel, cast iron, aluminum sheet and castings. It removes oil, rust, heat scale, other oxides, carbon smut, soldering and welding residues, identification inks and other soils. *It frequently eliminates pickling operations on moderately rusty steel.*

Oakite Compound No. 33 is great for hand-swabbing on metal surfaces too large to be soaked in tanks. It can save money for you in many ways.

**FREE** For a copy of Folder F7993 "New metal cleaner removes oil and rust in one operation", write to Oakite Products, Inc., 34E Thames St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING  
**OAKITE**  
MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in  
Principal Cities of United States and Canada

## Semifinished Steel . . .

Semifinished Prices, Page 145

**Cleveland**—Steel production is being pushed at capacity pace in this area. Barring labor difficulties and scrap shortage, expectations are output will be maintained at present peak levels indefinitely. Republic Steel Corp.'s plant here last month had record-breaking production. The 15 openhearths at the works turned out 163,207 tons during the month, bettering the plant's old record of 160,677 tons. Four large openhearths are under construction at this works and will be ready for operation in early spring, 1952.

## Structural Shapes . . .

Structural Shape Prices, Page 145

**Detroit**—From a leading industrial contracting firm comes the report none of its jobs are being held up by shortage of structural steel. Well booked presently on several big defense projects the company nevertheless says it has not received any new business for several months and is worrying about business conditions for it by about mid-1952.

**New York**—Structural demand is spotty, being restricted by Washington limitations on construction. Bridge work appears the only type of construction to be coming out here with any degree of consistency.

**Philadelphia**—Structural demand continues to decline due to government restrictions. Some fabricating shops, which early in the year had

well more than 12 or 15 months work on order, are now in position to accept tonnage for delivery within five to six months.

**Pittsburgh**—There has been no change in the structural supply situation in this district. Mills see little improvement in first quarter of 1952.

**Seattle**—Structural fabricators are highly selective in accepting new business because of the shortage of shapes. Backlogs extend to the end of first quarter.

## Tool Steel . . .

Tool Steel Prices, Page 147

**Washington**—Recommendation made to the National Production Authority to revise schedule B of ferritic alloy order M-80 to permit use of carbon tool steel for all purposes since this material is in adequate supply. Also, it is suggested the tool steel industry be exempted from provisions of direction 7 to CMP regulation 1 which provides that users must charge against fourth quarter allocations third quarter tonnage unshipped by Oct. 7.

## Pig Iron . . .

Pig Iron Prices, Page 144

**Cleveland**—Restoration of two idle blast furnaces to the active list in this district at the opening of the month has served to ease the pig iron supply shortage in this area. One stack at the American Steel & Wire Co., down since early September, resumed production of merchant iron, while a

This Diagonal Tie on crated machinery prevents torsional sway. It is galvanized to resist corrosion.

*Tie  
defense  
orders  
safely...*



## WITH GERRARD ROUND STEEL STRAPPING

It complies with packaging specifications JAN-P-106A, JAN-P-107 and JAN-P-108

● You won't have to worry about either the acceptability or the safety of defense orders tied with Gerrard Round Steel Strapping. It makes a tight, firm tie every time it is used.

You'll be pleased with the versatility of Gerrard Strapping, too. In addition to its suitability for securing boxes, cartons, and cases, Gerrard Round Strapping is the ideal choice for reinforcing all types of pallets, even such irregularly shaped objects as auto springs and axles. And with Gerrard Steel Strapping it is easy to fashion the Diagonal Tie for dependable reinforcement of all six sides of a carton or crate.

A Gerrard engineer will gladly consult with you about your defense strapping problems. Strapping ordered for defense receives preference in delivery according to current regulations. Strapping for non-defense purposes is being equitably distributed among our customers.

Gerrard Steel Strapping Company  
4745 S. Richmond Street, Chicago 32, Ill.



UNITED STATES STEEL

idle stack of Republic Steel Corp., taken off Sept. 22, resumed on basic. It is estimated some 25,000 tons of iron were saved by speeding up the down time on the Republic No. 1 stack to 38 days from the normal 60 to 75.

**Boston**—Basic iron excepted, pig iron supply in this area is not critical. Relatively satisfactory supply of iron and cast scrap has permitted most shops to maintain quality in castings.

**New York**—Pressure for foundry iron is off due to a spotty situation

among gray iron foundries on light work but there is still demand for all domestic tonnage offered. Demand for foreign foundry iron is off because of the premiums asked.

**Philadelphia**—Although makers of gray iron castings are not as badly in need of iron as they were, no domestic iron is going begging. Foreign iron, however, is a different matter, for consumers regard the premiums asked as being too stiff.

**Chicago**—Demand for pig iron comes closer to matching supply than at any time in recent months.

**Pittsburgh**—Gray iron foundry activity is lagging due to cutbacks in civilian durable goods industries.

Allegheny Ludlum Steel Corp. has made a long-term contract with Crucible Steel Co. of America for the purchase of pig iron from the latter's Midland, Pa. plant. The contract is for five years, and is expected to begin in 1953.

## Scrap . . .

Scrap Prices, Page 152

**Boston**—Movement of cast grades has improved slightly. Steelmaking grades are also moving in heavier volume, but not enough to materially enlarge inventories.

**Philadelphia**—Government price regulations are having a stabilizing effect on supply of open hearth scrap. They are checking in considerable degree the flow of scrap to inland districts.

**Pittsburgh**—Scrap situation remains unchanged with consumers holding only a few days stocks instead of the 60-day supply which should be on hand as they go into the winter season. The trade is seeking to stop upgrading.

**Detroit**—Ceiling on dealer-to-dealer scrap transactions has been the subject of discussion in the trade and some interests believe it takes most of the incentive out of collection by peddlers.

**Cincinnati**—With allocations, enough scrap is coming into the district to support steel operations. Little tonnage is being stocked for winter, however.

**Chicago**—Heavy snows last week halted yard operations. Slowed shipments coupled with sharp increase of NPA allocations to Youngstown and Pittsburgh are expected to put Chicago steel plants on the ragged edge in a matter of days.

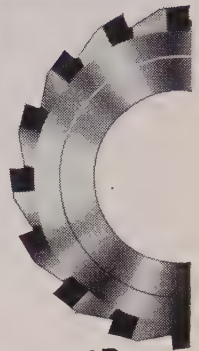
**Seattle**—Continuous struggle to get in enough scrap to keep the furnaces operating at capacity is reported. One buyer has contracted for 1000 tons from canneries and sawmills in Alaska. This scrap will be shipped by scow.

## Iron Ore . . .

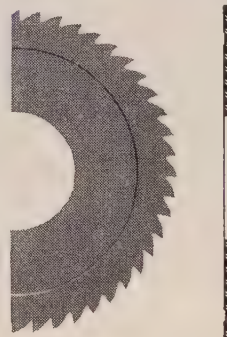
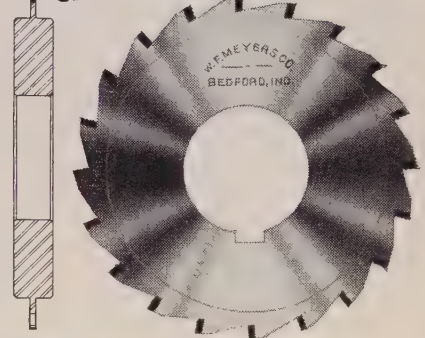
Iron Ore Prices, Page 151

**Cleveland**—Unseasonably low temperatures in the upper lakes region are hampering movement of iron ore and threaten an early closing of the shipping season. Shipments dropped to only 1,498,243 tons for the week ended Nov. 5 compared with 2,423,398 tons for the like week a year ago. This brought the cumulative total for the season to date to 83,270,213 tons against 71,761,248 tons for the like 1950 period.

## PRECISION CIRCULAR CUTTERS



## MEYCO CARBIDE TIPPED

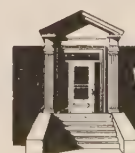


## MEYCO SOLID CARBIDE

MEYCO saws and cutters in various diameters and thicknesses can be furnished to your individual specifications. MEYCO cutters have earned an enviable reputation where long tool life and precision are a must.

Increase production in your slotting, venting and slitting operations by using MEYCO cutters. Please furnish complete specifications and quantities desired when requesting prices and indicate material to be cut.

Manufacturers of precision tools since 1888



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Uniformly High Quality

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STANDS 50,000 LB. LOADS  
60 seconds after application

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FLOOR RESURFACER

No production delays. Just prime, fill, tamp—over wood, concrete, steel for new floor or patch. Write for free book!



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ELLWOOD CITY, PENNSYLVANIA  
SAN CARLOS, CALIFORNIA  
PORT HOPE, ONTARIO, CANADA

## Warehouse . . .

Warehouse Prices, Page 151

**Pittsburgh**—Warehouses are having no success in building inventories. During the last month their receipts have progressively worsened.

**Cleveland**—Whether the warehouses will have to absorb the recent increase of  $\frac{1}{8}$  cent in mill prices on galvanized sheets and other products is uncertain. Over recent months the distributors have had to absorb any added costs and they may have to do so in the case of galvanized items. A warehouse price order was reported being prepared by OPS months ago, but so far it has not been issued.

## STRUCTURAL SHAPES . . .

### STRUCTURAL STEEL PLACED

660 tons, Depot Quartermaster, Marine Corps, Philadelphia, to Buffalo Steel Co., Tonawanda, N. Y.

525 tons, stringer bridges, state highway, Harvard-Lancaster, Mass., to Bethlehem Steel Co., through Bayer & Mingola Co., Worcester, general contractor.

493 tons, bridge work, Port Authority of New York, Newark, N. J., to Harris Structural Steel Co., New York.

430 tons, angles, Depot Quartermaster, Marine Corps, Philadelphia, to Bethlehem Steel Co.

400 tons, 648-foot Montana state bridge, Cascade county, to unstated fabricator; W. P. Roscoe Co., Billings, general contractor.

325 tons, state undercrossing, Vancouver, Wash., reported to Poole, McGonigle & Dick, Portland, Oreg.; C. J. Montag, Portland, general contractor.

300 tons, project at Hanford, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

### STRUCTURAL STEEL PENDING

5400 tons, Palisades dam and powerhouse, Snake river, Idaho; bids to be invited in February by Bureau of Reclamation, Denver.

2200 tons, state bridge, Lancaster, Pa.; C. W. Good, that city, low on general contract.

1760 tons, Corps of Engineers, Baltimore; bids in.

875 tons, state bridge, Beaver county, Pennsylvania; Du Felice Construction Co., New Haven, Conn., low on general contract.

500 tons, industrial waterway bridge, Tacoma; general award to Anderson Bridge Co. and Roy T. Earley Co., joint low \$1,342,285.

500 tons, transmission towers; Creamer & Dunlap, Tulsa, Okla., low \$146,961 to Bonneville Power Administration, Denver.

497 tons, state bridge, Salem county, New Jersey; bids Nov. 27.

400 tons, state bridge, Lancaster county, Pennsylvania; Reiffitt Construction Co., Reading, Pa., low on general contract.

220 tons, Washington state bridge, Grays Harbor county; bids to Olympia, Nov. 14.

200 tons, Long Island Railroad bridge, Glen Cove, L. I.; pending.

100 tons, Ross power house; bids to City of Seattle, Nov. 13.

## REINFORCING BARS . . .

### REINFORCING BARS PLACED

350 tons, Tacoma industrial viaduct, to J. D. English Steel Co., Tacoma, Wash.

300 tons, several Oregon state bridges to Portland suppliers; Tom Lillebo, Reedsport, Oreg., general contractor.

270 tons, factory, Hachmeister Inc., Allegheny county, Pennsylvania.

### REINFORCING BARS PENDING

7250 tons, Palisades dam and powerhouse, Snake river; bids to be invited by Bureau of Reclamation, Denver, in February.

1500 tons, power plant, Dubuque, Iowa.

1200 tons, hot strip mill, Pittsburgh Steel Co., Allenport, Pa.

760 tons, by-product coke plant, United States Steel Co., Clairton, Pa.

500 tons, treatment plant and sewer system, Lake City district, Seattle; general bids in.

400 tons, International Graphite & Electrode Corp., Niagara Falls, N. Y.

325 tons, propeller test stand, Wright Field, Dayton, O.

225 tons, Bureau of Public Roads, Nevill Island, Pa.

150 tons, Washington state highway project, Grays Harbor county; bids to Olympia, Nov. 14.

135 tons, Wayne Memorial school, Wayne, Mich.

122 tons, state bridge, Salem county, New Jersey.

## PLATES . . .

### PLATES PLACED

275 tons, hull plates, Navy Purchasing Office, Washington, to Republic Steel Corp., Cleveland.

100 tons, standpipe, Barrington, R. I., to Chicago Bridge & Iron Co., Chicago.

### PLATES PENDING

3000 tons, liners and miscellaneous, Palisades dam and powerhouse, Snake river, Idaho; bids to be invited in February.

## RAILS, CARS . . .

### LOCOMOTIVES PLACED

Florida East Coast, five 1500-hp diesel-electric freight locomotive units, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

Spokane, Portland & Seattle, eight 1600-hp diesel-electric road switching units, to American Locomotive-General Electric Companies, Schenectady, N. Y.

### RAILROAD CARS PENDING

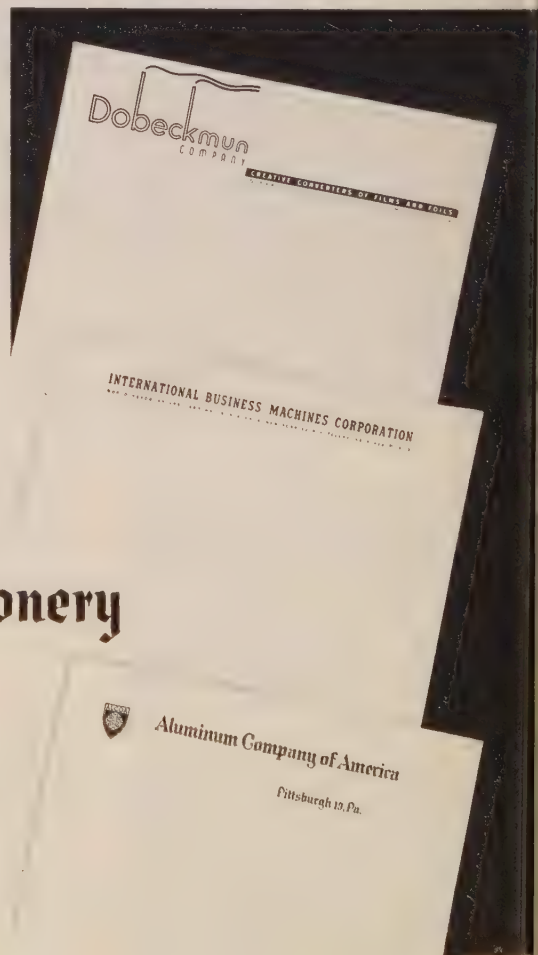
Chesapeake & Ohio, 1000 coal cars; purchase at cost of about \$6 million authorized.

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# Metalworking Briefs . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

## Castings Producers Merge

Crucible Steel Casting Corp., Milwaukee, merged with Ebaloy Inc., Rockford, Ill., and will be known as Crucible Steel Casting Co. Division. Headquarters of the firm will be in Milwaukee. R. D. Colburn is president; A. J. Dempsey, vice president for operations; J. E. Schaible, vice president for sales. The company plans to expand aluminum casting operations at its Rockford plant to handle Air Force subcontract work. Crucible completed a \$250,000 equipment expansion program in September which will add 20 per cent to its potential output. The equipment consists of 20 molding machines designed for production of small castings.

## Talon Sells Erie Foundry

Erie, Pa., plant of Talon Inc. was purchased by Continental Foundry & Machine Co., E. Chicago, Ind. The Erie plant will be altered to handle Continental's Northern Equipment Division, now located at 1945 Grove Dr., Erie.

## Buys Hydraulic Equipment

New York Air Brake Co., New York, purchased the stock of Hydraulic Equipment Co., Cleveland, manufacturer of oil-hydraulic pumps, valves and cylinders used principally on earth moving and materials handling equipment. Bernard Peyton, president, and Lewis K. Silcox, executive vice president of New York Air Brake Co. are chairman and vice chairman, respectively, of the board of directors of Hydraulic Equipment Co.

## Western Automatic Expands

Western Automatic Machine Screw Co., Elyria, O., is constructing a \$2.5 million addition to its plant.

## Frasse Opens Warehouse

Peter A. Frasse & Co. Inc., New York, opened its warehouse on Main avenue, Lindhurst, N. J.

## National Electric Expands

National Electric Products Corp., Pittsburgh, purchased a million-dollar factory in Elizabeth, N. J., from Standard Tool & Mfg. Co., Arlington, N. J. National is equipping the plant with more than \$2 million worth of machinery for making electrical roughing-in materials. The plant will initially fabricate steel into rigid conduit, electrical metallic tubing, busway, switch boxes

and electrical connectors. The company plans to make several new products in the new factory. National Electric is said to have completed arrangements to receive its requirements of pipe from National Tube Co.'s projected plant at Morrisville, Pa.

## Brad Foote Buys Gear Maker

Brad Foote Gear Works Inc., Chicago, purchased Pittsburgh Gear Co., Pittsburgh, producer of gears for mining machinery and the steel industry.

## Cincinnati Milling Moves

Cincinnati Milling & Grinding Machines Inc. and Cincinnati Milling Products Division, Cincinnati, moved their Detroit office to larger quarters at 24100 N. Woodward Ave., Pleasant Ridge, Mich. Joe P. Baldez is manager of the office. The Milling Products Division is headed by Carl Dannenfelser.

## Gould Builds Ft. Erie Plant

Gould Storage Battery Co. Ltd., Canadian subsidiary of Gould-National Batteries Inc., is building a plant in Ft. Erie, Ont. The new plant, with equipment, will cost about \$250,000 and is slated to go into production of batteries early in 1952.

## Minnesota Mining Moves

Minnesota Mining & Mfg. Co. moved its branch sales office and warehouse to 330 Greene St., Buffalo.

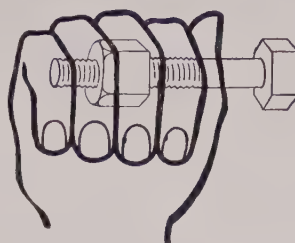
## Gear Firm Adds Facilities

Foote Bros. Gear & Machine Corp., Chicago, leased about 24,000 square feet of space from Barrett-Craven Co. at 4613 S. Western Blvd., that city, for expansion of facilities used in the manufacture of high-precision aircraft gears and gear drives. The company is acquiring about 100 new high precision machine tools, including heat-treating furnaces, from the government and from prime contractors to the Air Force and Bureau of Aeronautics, under facilities contracts.

## Oliver Buys Equipment Firm

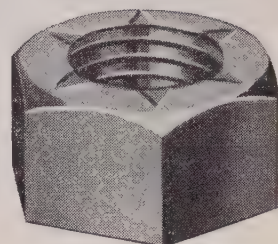
Oliver Corp., Chicago, contracted to acquire either substantially all of the stock or the going business and properties of A. B. Farquhar Co., York, Pa., manufacturer of agricultural and industrial machinery. The Farquhar business will be operated as a separate division, retaining both its manufacturing and its dealer or-

# IT GRIPS THE BOLT



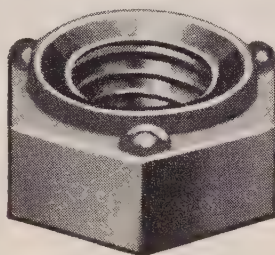
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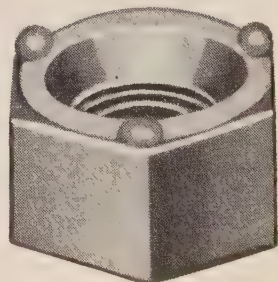
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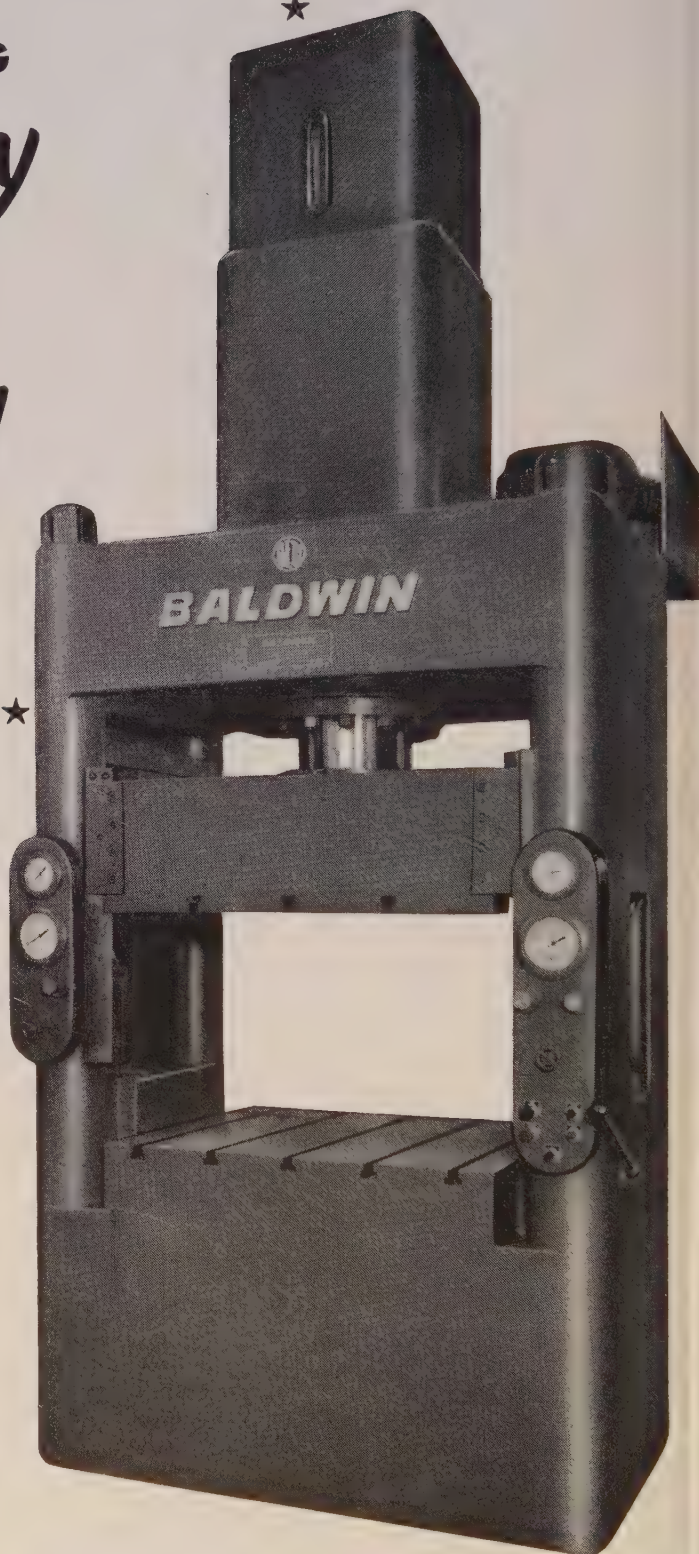
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ganizations. E. H. Fisher will continue to be the general manager of its operations. William J. Fisher, president of Farquhar, will become a vice president and director of Oliver.

#### Motor Firm To Build in West

U. S. Electrical Motors Inc., Los Angeles, will construct a 250,000 square foot plant on the Santa Ana freeway, West Anaheim, Calif. Eventual employment will reach 4000 persons.

#### Honing Plant Opens on Coast

U. S. Honing Co. opened a plant at 1217 Newport Ave., Long Beach, Calif. The recently organized firm has facilities for honing the large hydraulic cylinders used in modern aircraft.

#### Gleason Plans Expansion

Plans for an \$8,089,643 expansion program at Gleason Works, Rochester, N. Y., were revealed by E. Blakeley Gleason, president. Some of this money has been spent for machinery.

#### Morrison Buys Pump Line

Morrison Co., Milwaukee, purchased Heil Co.'s complete line of water pumps for rural household service. Production and distribution of the new line is under way.

#### Gulf Plans Cincinnati Plant

Gulf Oil Corp., Pittsburgh, will build a blending, drumming, and canning plant in Cincinnati for petroleum products. This plant is the latest project under Gulf's \$200 million budget for expansion to be expended this year.

#### Lepel Moves to Woodside

Lepel High Frequency Laboratories moved into their new building at 55th street and 37th avenue, Woodside, Long Island, N. Y. The new plant will enable Lepel to triple production of high-frequency heating equipment.

#### Charlton Building Factory

Charlton Co. Inc., Fitchburg, Mass., is constructing a \$350,000 building in the Los Angeles International Airport industrial tract for manufacture of convertible living room furniture.

#### Orders Nitriding Facilities

Chemical Plants Division, Blaw-Knox Co., Pittsburgh, received a contract from Otis Elevator Co., New York, for construction of nitriding facilities at the latter company's plant at Harrison, N. J. Otis is installing the new facilities in order to handle current contracts with the Air Force for the nitriding of aircraft

cylinder barrels. The unit is expected to be in operation about Feb. 1, 1952.

#### Retooling To Cost Millions

Food Machinery & Chemical Corp., San Jose, Calif., received a \$30 million V-loan to finance production of armored personnel carriers under Army Ordnance contract. Tooling cost for the project will approximate \$42 million.

#### Lockheed Expands Further

Lockheed Aircraft Corp., Burbank, Calif., plans to expand its recently acquired subassembly facilities at Bakersfield, Calif., to more than double the size of the plant now being readied for operation. The original plant and the addition will provide 112,000 square feet of factory space.

#### GM Plans Winnipeg Depot

General Motors of Canada Ltd. will erect an assembly plant and parts depot in Winnipeg, Man. The city's finance committee approved sale of a 100-acre site for the development which may cost \$2.5 million.

#### Bliss Names Representative

E. W. Bliss Co., Canton, O., appointed Iowa Machinery & Supply Co., Des Moines, Iowa, as sales representative and service agency for Bliss mechanical and hydraulic presses in central Iowa.

#### Cleco Appoints Distributor

Cleco Division, Reed Roller Bit Co., Houston, appointed Harris Pump & Supply Co., Brady and Sidney streets, Pittsburgh, as distributor in that area for Cleco air tools and accessories.

#### Reorganizes Aircraft Firm

Pacific Overseas Airlines, International Airport, Ontario, Calif., will be reorganized as Pacific Aircraft Industries Inc. The concern will be directed by Col. Paul R. Blair, United States Air Force, Ret., as executive vice president.

#### Victor Buys Canadian Plant

Victor Mfg. & Gasket Co., Chicago, purchased a plant in St. Thomas, Ont. The 60,000 square feet of floor space will be used for its Canadian manufacturing activities and distributing headquarters. The company plans to begin production there early in 1952.

#### Imports Milling Machines

Carl Hirschmann Co., Manhasset, N. Y., was appointed exclusive representative in this country for Technica A. G., Grenchen, Switzerland. A line of milling ma-

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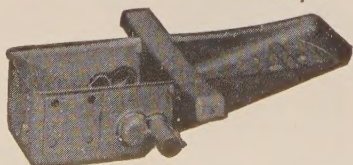
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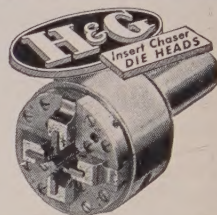
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chines and accessories manufactured by Technica for precision work on small parts will be imported by Hirschmann and stocked in Manhasset and Los Angeles.

#### Sherold Acquires Factory

Sherold Specialty Products Inc., New York, purchased a former foundry at Saratoga Springs, N. Y., and plans to open an electronics factory on the site. Work will begin at once to equip the building as a modern factory.

#### Rockwell Opens Tupelo Plant

Rockwell Mfg. Co.—power tools and industrial equipment—Pittsburgh, dedicated a branch plant encompassing 160,000 square feet at Tupelo, Miss. The Rockwell plant is the first large machine tool operation of its kind in the state of Mississippi.

#### Stove Maker To Be Renamed

American Stove Co., St. Louis, will change its corporate title Dec. 31 to Magic Chef Inc., subject to approval of stockholders.

#### Hill-Chase Gets Agency

Rigidized Metals Corp., Buffalo, appointed Hill-Chase & Co. Inc., Philadelphia, and Hill-Chase Steel Co., Baltimore, as distributors in those districts of its high-strength light-weight metals.

#### Avco Buys Canadian Firm

Physical assets of Brand & Millen Ltd., Long Branch, Ont., were acquired by Cros-

ley Division, Avco Mfg. Corp., Cincinnati. Avco will operate the Ontario company, engaged in radio and television manufacturing, under direction of a wholly-owned subsidiary, Crosley Radio & Television Ltd. to be organized in Canada.

#### Struebling To Move Offices

Struebling & Buchheit Inc., Buffalo, distributor of tools and abrasives, purchased a building at 1215 Military Rd., that city, and is moving its offices and warehouse facilities to the new site. Harold J. Struebling is president of the company.

#### Saw Mill Machine Firm Sold

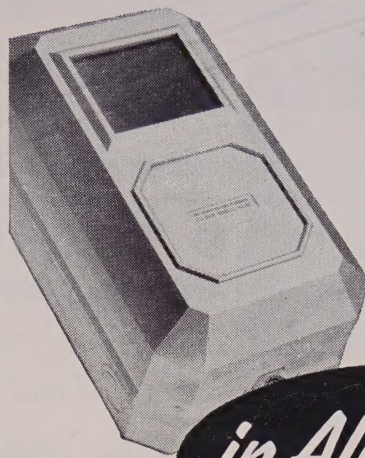
General Water Works Corp., Philadelphia, purchased American Saw Mill Machinery Co., Hackettstown, N. J., and will merge it with Sunset Engineering Co., Riverside, N. J., a subsidiary of General Water Works.

#### Warehouse Opens in South

Lyon, Conklin & Co. Inc., Baltimore, opened its new warehouse at 711 Edgewood St. N.E., Washington 17. This company is one of the oldest fabricators and distributors of sheet metal in the South.

#### Represents Warner Electric

Kenny Consolidated Engineering Industries Ltd., Toronto, Ont., was named representative for Warner Electric Brake & Clutch Co., Beloit, Wis., manufacturer of control equipment.



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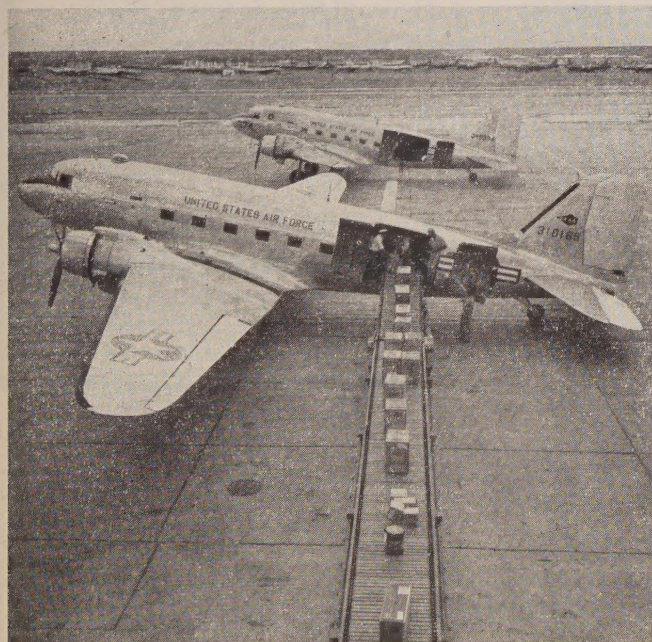
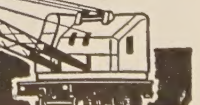
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